Products Finishing

CLEANING

PLATING

POLISHING

FINISHING

NOVEMBER • • • 1947

15

finishing firsts

. . . WHY YOU CAN SO
YOUR FINISHING PROBLEMS W

"an Interchem *Finis*

- **FIRST** *Successful Speed-Bake Finish*
- **FIRST** *Durable Alkyd-R Synthetic Finish.*
- **FIRST** *Moisture-Repellent Sealers.*
- **FIRST** *Organic Finish f Automobile Lic Plates.*
- **FIRST** *Finish Designed Specifically for Infra-Red Baking.*
- **FIRST** *Steel Drum Linin Permitting the Packaging of Fo and Chemicals.*
- **FIRST** *Permanent, Non-Grain-Raising Stains*
- **FIRST** *Flexible Air Dry No-Primer Lacqu for Metals.*
- **FIRST** *Grain Reproduction Finishes to Achieve Real 3-Dimensional Effects.*
- **FIRST** *Plastic Base Prim with Universal Adhesion.*
- **FIRST** *Modern Plastic Type Coatings for Wood.*
- **FIRST** *Commercially Su cessful Chlorinat Rubber Base Coatings.*
- **FIRST** *Opalescent Auto Finishes.*
- **FIRST** *High Heat Resist Organic Finish.*
- **FIRST** *Fungus-Resistant Coatings.*

Check over this list of fifteen finishing firsts . . . they're important to you because they evidence the wealth of knowledge and finishing experience that Interchemical technicians can call on to help solve your finishing problems.

What's more, Interchem factories and laboratories are backed by the interrelated research program carried on by the Interchemical Corporation . . . research which carries into every basic phase of coatings, printing inks, pigmentation, metal decorating, grain reproductions, textile colorings, and a host of other related products.

To make sure that you have the most effective finish for your product, Interchemical technicians will formulate a finish specifically designed to meet your application problems. Write: Interchemical Corporation, Finishes Division, 350 Fifth Avenue, New York 1, N. Y.

Interchem *Finishes*

FRED W. VOGEL, *Editor*

•

ROBERT I. SHORE
Associate Editor

•

Consulting and Contributing Editors
H. LEROY BEAVER
ALLEN G. GRAY

•

GENE J. SCHWARBER
Advertising Manager

J. C. DUFF
Circulation Manager

JESSE R. HARLAN
Manager Sales Promotion

NORMAN S. ROGERS
Art Director

RICHARD S. KLINE
GEORGE E. HAY
[illegible] Main St., Cincinnati 2
MAin 0182

G. M. FILLMORE
342 Madison Ave.
New York 17
Murray Hill 6-3899

JOHN M. KRINGS
[illegible]ribune Tower, Chicago 11
Delaware 5441

CHARLES H. DEILY, JR.
351 Mattison Avenue
Ambler, Pa.
Ambler 0339

MEMBER

CCA

Published monthly and copyrighted (1947) by
[illegible]NER PUBLICATIONS, Inc.
[illegible] Main St., Cincinnati 2, Ohio

[illegible]d Campbell .....*President*
[illegible]M. Krings.....*Vice President*
[illegible]lle M. Fillmore..*Vice President*
[illegible]et L. Gardner.....*Secretary*
[illegible]d S. Kline.....*Treasurer*

Printed in U. S. A.

Products Finishing Contents

Volume 12 **NOVEMBER, 1947** **Number 2**

Editorial 19

Beautyware Finishes 20
By Bryant W. Pocock

Glycerine in Electrolytic Treatment of Aluminum and Its Alloys 36
By Georgia Leffingwell and Milton A. Lesser

Finishing Clinic
By Dr. Allen G. Gray
—Recent Developments in the Use of Conversion Coatings on Zinc Plated Steel..... 50
—Automatic Hot Zinc Galvanizing May Show Advantages in Production Units..... 60
—Proper Surface Preparation Important for Porcelain Enameling 62
—Determination of Adhesion of Plated Coatings on Aluminum 70

Barrel Finishing of Metal Products
By H. Leroy Beaver
Part 15—A Discussion Concerning Barrel Loads and Barrel Speeds 76

Practical Applications of Modern Products
—Elevator Interiors Are Finished to Retain Tonal Values and Reflectiveness 90
—Phosphatizing Process Utilizes Gas Immersion Heaters 94

News of the Industry.....100
Finishes That Aid in Appearance and Utility.....112
New Equipment and Materials 114
The Finishing Touch 132
Opportunity Section 133
Catalog Library 134
Index to Advertisements 136

ONLY BINKS MAKES FINISHING SYSTEMS LIKE THESE

Here are two finishing departments. Both are finishing buses . . . one the streamlined beauties of the highway made by the General American Aerocoach Company, the others the colorful little toys produced by the Dowst Mfg. Company. The finishing problems faced by these two companies varied widely, yet each found the perfect answer in Binks equipment . . . once more emphasizing the fact that *Binks has everything you need for complete spray finishing,* regardless of the size of your department or the product you make. Every unit in a Binks installation—from the spray gun to the Dynaprecipitator water wash booth—is precision designed to function as an integrated system for faster, better finishing at lower costs. Call in a Binks engineer today and let him show you how to speed up your production, better your finishes and slash your costs.

SEND TODAY for this brand new Binks Catalog-Data Book and see for yourself the completeness of this line of truly precision finishing equipment.

If you want the best... specify Binks

BINKS

Products finishing

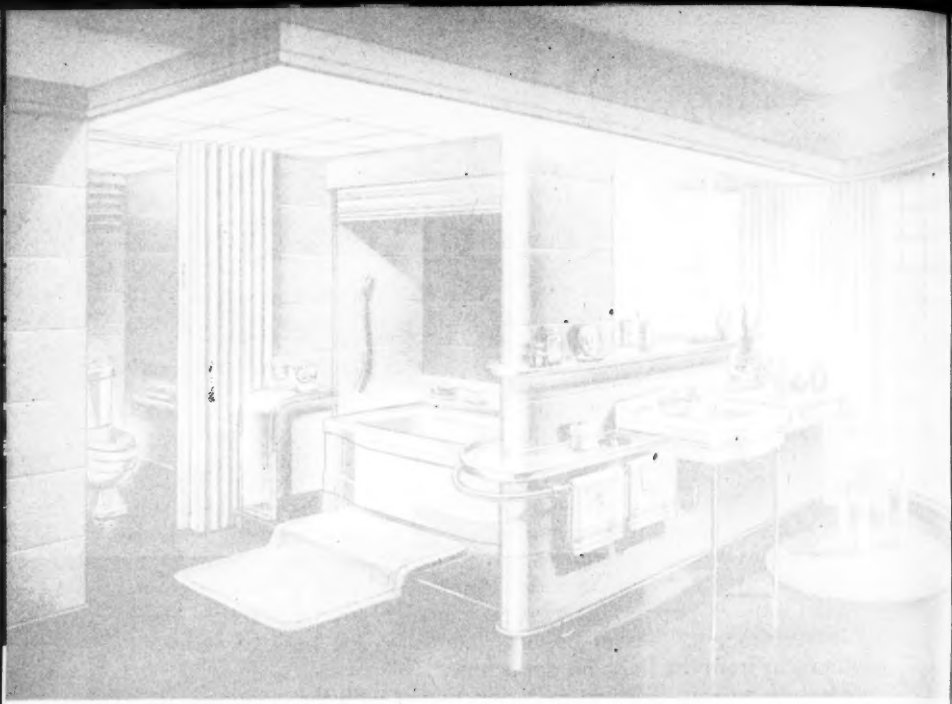
Controlled Finishing

With the trend toward the application of finishes becoming more of an exact science and less rule-of-thumb, and with the supervision of finishing in the hands of technically trained men, more and more progressive plants are increasing the efficiency of their finishing rooms through the use of proper control methods. Uniformity of product is important in successful production operations, and is necessary for repeat business; control is the basis of uniformity of product coming from the finishing department.

The control of organic finishing materials begins with the adoption of the specific materials to be used and a thorough understanding between the supplier and the purchaser. During the negotiations for samples and the development of organic coatings for specific uses, the prospective supplier should be given full information as to the kind of product to be finished, service conditions under which it is to be used, and the durability characteristics expected, as well as details on surface preparation and application procedures. After a finish has been seelcted for use, the supplier should agree that no change in formulation will be made without advising the purchaser as to the reason and nature of the change.

Control over the uniformity of a product finish embraces many factors other than the quality of the finishing material used. Controlled finishing in an industrial finishing room includes control of viscosities, mixing and delivery of materials; control of film thickness; control of spray equipment and repairs; control of exhaust, replacement air, temperature, and cleanliness of the finishing room.

Controlled finishing with its accompanying improvements in the quality of the finish and the economies in labor and material is practical for the smaller manufacturers, as well as the larger plants. Such control setup for the larger industries has proved that it pays for its upkeep many times over by economies effected, rejections minimized, and satisfied customers. For small plants, because of the limited quantity and variety of material used, such a high degree of control may not be too practical, but even in small plants the proper types of control can be found which will be suitable and applicable.



Beautyware Finishes

By BRYANT W. POCOCK

"Most of the articles we use are too heavy. The sheer weight of things has increased cost and hindered advancement —like the old castles abroad that cannot be modernized. With the materials now available we can replace these things with lighter and superior articles. New materials enable us to discard the theory that only weight means strength." — Henry Ford*

IF a chemist should request the National Bureau of Standards in Washington, D. C., to forward him a standard sample of the purest grade of commercial ferrous metal available, which would be suitable for use in standardizing his analytical solutions, he would receive a sample similar in analysis to Armco Ingot Iron. Armco iron is well known to analytical chemists the world over. It is the most highly refined of all commercial ferrous metals. It is the material used by the Briggs Manufacturing Company in making bath tubs, lavatories, and sinks.

The reasons why Briggs should use such a high grade of basis metal for its porcelain enameled plumbing fixtures are many and varied. One reason is that a material containing less than a tenth of one per cent of impurities must as a consequence possess a high and consistent degree of uniformity.

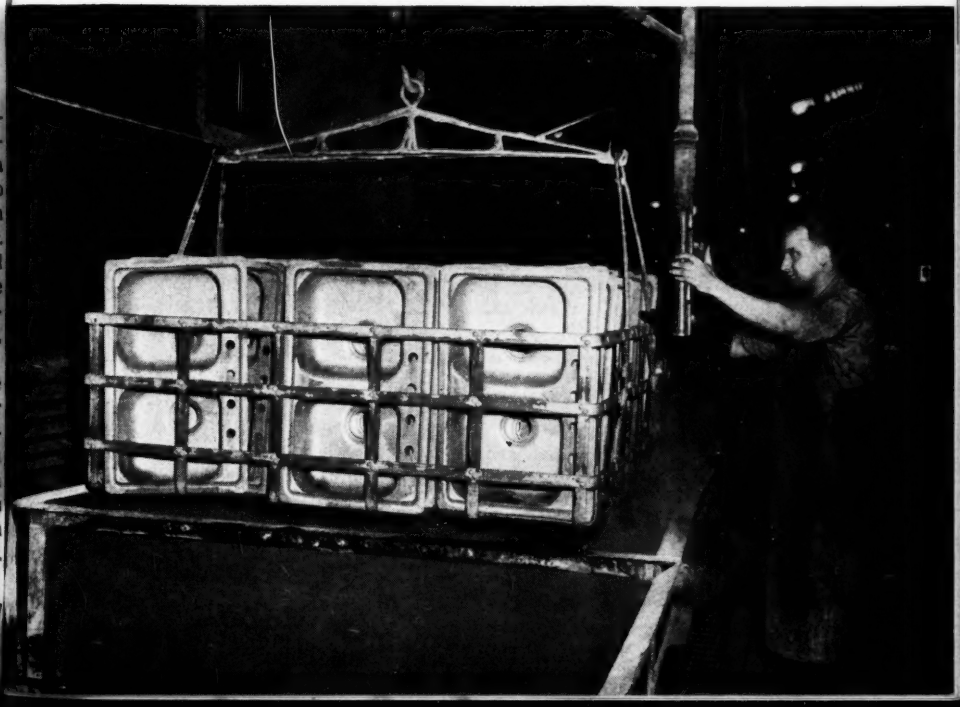
*"Why Formed Metal Is the Ideal Base for Porcelain Enameled Plumbing Fixtures," Briggs Manufacturing Co., Detroit, Mich.

This is of value in preventing crazing in firing (hairline cracking) and chipping of the porcelain enamal traceable to unequal expansion or contraction of the enamel and the basis metal. In addition to dependable uniformity, Armco Ingot Iron possesses high ductility, which permits difficult forming operations without injury to the metal. It is very malleable, and its tensile strength is double that of cast iron. Of greatest interest from the finishing standpoint is the fact that porcelain enamel has been found to adhere more strongly to Armco Ingot Iron than any other metal tried by the company.

Cast iron and ordinary steel contain appreciable quantities of gas-producing impurities which are apt to cause difficulties if not actual defects in porcelain enameling. One of these impurities, a well-known constituent of steel, is carbon. At the fusion temperature, carbon near the surface of the metal burns to form carbon monoxide and carbon dioxide gases, which make good porcelain enameling difficult. Armco Ingot Iron contains less than one-tenth the amount of carbon frequently present in a good grade of open hearth steel, consequently, difficulties caused by gas formation are absent. There is no problem of bubble or blister formation. The natural adaptability of Armco Ingot Iron to porcelain enameling is further enhanced by Briggs' pre-enameling treatment during which the metal is processed to furnish a surface which grips and holds the porcelain enamel in a permanent bond. Microscopic fingers are produced, which enter and anchor themselves in the fused enamel.

The history of porcelain enameling can be traced back to the earliest times. Originally, it was an outgrowth of the pottery industry, and the latter

Fig. 1—View of Briggs pickle room, showing a basket of double-compartment flat rim sinks being lifted out of the final rinse tank



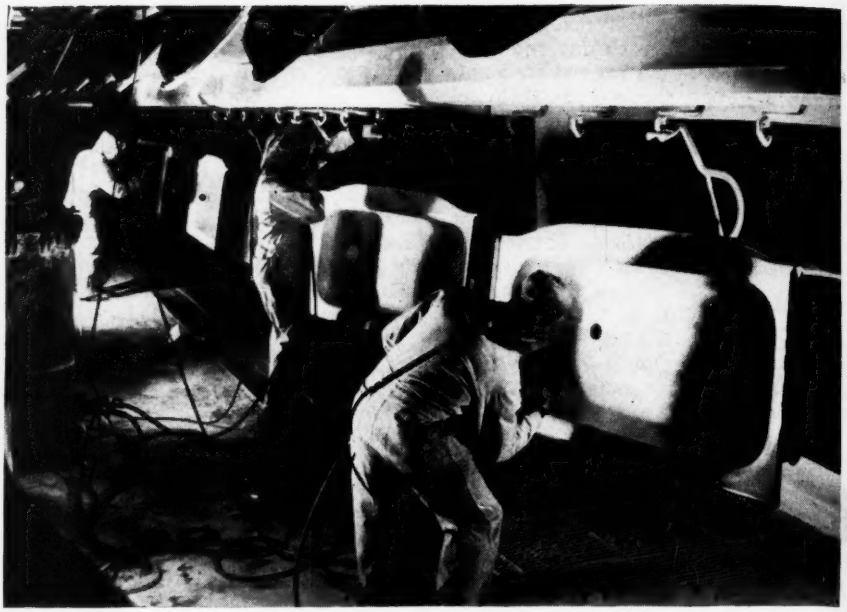


Fig. 2—One of five spray booth lines where liquid porcelain enamel is sprayed on the various Briggs Beautyware plumbing fixtures. Operators wear hood-shaped masks which are supplied with washed and filtered fresh air, thus affording spayers maximum safety.

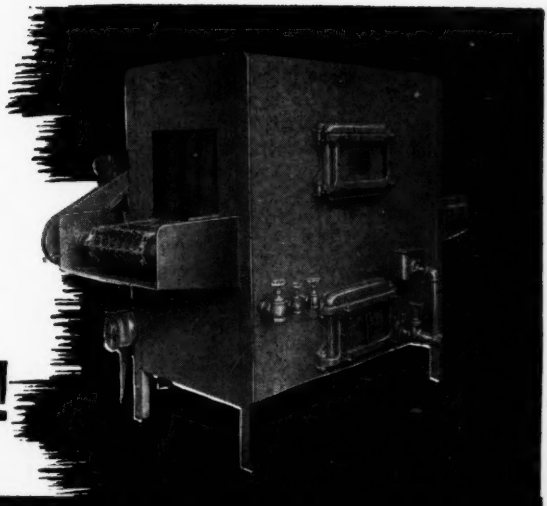
is one of the yardsticks by which we measure civilization. Even 50 years ago, sanitary plumbing was intimately tied up with clay products, these being more widely used than steel. The early American bath tub was a huge clay structure having a porcelain exterior and weighing 800 lb. It was massive enough to require special bracing of the bathroom floor, and undoubtedly contributed its own influence to the styles which Colonial architecture pursued. Then, a mutually profitable compact between the ceramics and foundry practices resulted in the somewhat lighter and more durable cast iron tub. This weighed about 500 lb. and had its inception half a century ago. Contrast with this the formed metal tub, which weighs only 110 pounds.

The first of these units went through Briggs production lines in 1933. Since then, over a million and a half plumbing fixtures of all kinds fashioned of porcelain enameled Armco Ingot Iron have been fabricated by Briggs, and the American public has been presented with an entirely new concept of domestic hydraulics with the advent of Briggs Beautyware.

Because of the high quality, chemically pure nature of all materials used in their manufacture, Briggs Beautyware units are produced in one grade only; namely, acid-resisting porcelain enamel. In contrast to ordinary enameled surfaces, those of the Briggs units are unaffected by the juices of citrous fruits, the alcohol in cocktails and highballs, milk, medicines, hard water, and even muriatic acid. All of these substances either stain or attack regular porcelain enameled plumbing fix-

More efficient!

More economical!



WHY BE SATISFIED WITH LESS?

• For many types of metal products cleaning jobs, this is the most efficient, most practical machine you can possibly get. It will also prove the most economical. There are *specialized* metal parts and products cleaning jobs, however, that require especially designed and engineered machines. In these cases, remember that A-F engineers specialize in custom-built equipment designed to do a specific thoro-cleaning job. Write *today* for folder describing how others clean their metal products with A-F "standard" and "custom-built" Equipment.

THE ALVEY-FERGUSON COMPANY

633 Disney St. ***Established 1901*** **Cincinnati 9, Ohio**

Offices in Principal Cities—Coast to Coast

CONVEYING A-F MACHINERY **Alvey-Ferguson**

tures, by removing glaze or by chemical adsorption through relatively large pores. Bathroom tile setters commonly clean tile walls with muriatic acid, which frequently runs down the wall into enameled fixtures. If the latter are finished with ordinary materials, they may become irreparably damaged.

The combination of chemically pure iron with high grade porcelain enamel provides for maximum hardness and abrasion resistance and makes possible a maximum conservative of materials, this in turn leading to minimum weight. It is to be emphasized that the thickness of the porcelain coating is not a measure of either quality or durability. For example, the porcelain on a high-grade type of vitreous china which will withstand the severe red aniline absorption test is by comparison, probably, no thicker than the skin on a human eyeball. (This china is produced by the John Douglas Co., Cincinnati, Ohio, a totally-owned subsidiary of the Briggs Manufacturing Company and one of the oldest producers of vitreous china in the United States.) It is a matter of interest in this connection that water entering cracks occurring in ordinary porcelain glazed clay fixtures gives rise to swelling and ultimate breakage. This does not occur with vitreous china. For comparison, vitreous china is fired at 2,300 deg. F. and Briggs porcelain enamel is fired at 1,550 deg. F.)

Basis metal stock for Briggs' bath tubs, lavatories, and sinks is 14-gauge Armco iron. There is no noticeable reduction in thickness from the original gauge as a result of the forming process.* Very little, if any, mechanical metal finishing is required, as only high precision dies are used. Drawn fixtures made at Briggs' Eight Mile Road plant enter the Hamtramck

*Linsley, H. E.: "Producing Formed Steel Plumbing Fixtures", *The Iron Age*, pp. 54-7, Nov. 7, 1946.

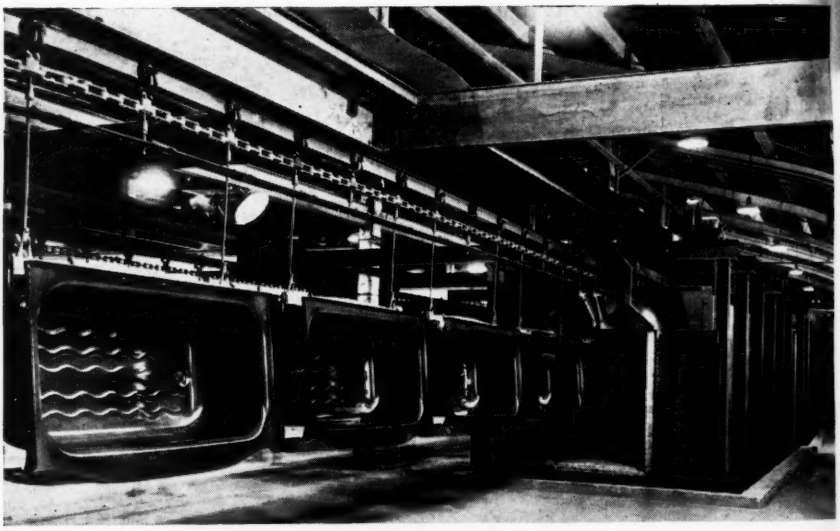


Fig. 3—Briggs Beautyare bath tubs emerging from continuous porcelain enameling furnace after firing of the ground coat. The fixtures have a bluish color typical of the cobalt used in the ground coat frit.

FULLER technicians and service men are sales-minded, too. They know the sales-worth of eye appeal in metal products—and the good-will value of consumer satisfaction. Couple this with Fuller's known knack of helping keep finishing production costs in line! Valid reasons, we think, why so many Western metal manufacturers specify Fuller finishes for their baking schedules—and why so many Plant Superintendents look with pride on the smo-o-o-th job Fuller finishes give.

W. P. Fuller & Co., Industrial Finishes Division, San Francisco 19, California.

FULLER • Industrial • FINISHES

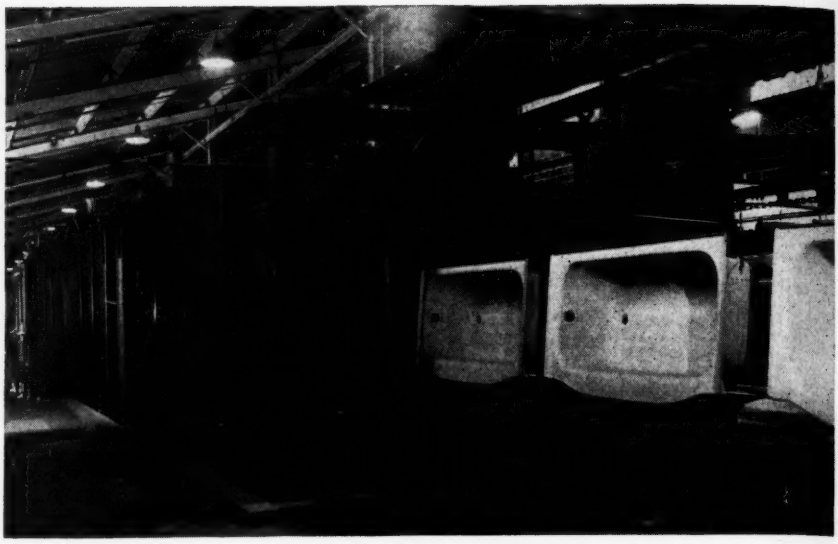


Fig. 4—Porcelain enameled bath tubs entering continuous firing furnace

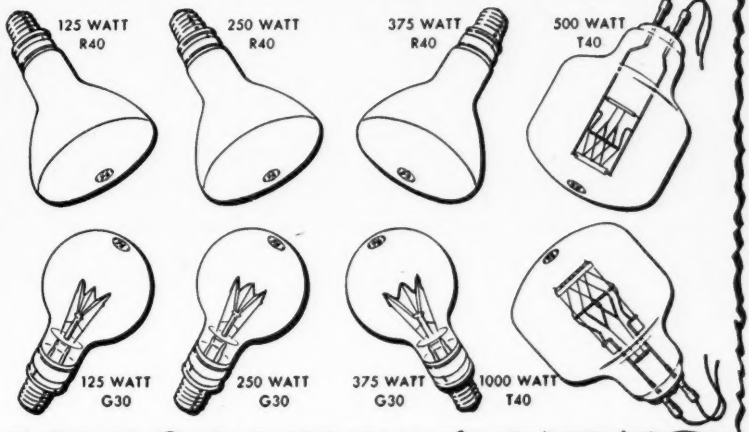
plant coated with drawing compound. This is left on as a protective coating until the parts are to be processed.

The first operation in processing is pickling. This is done in Monel metal baskets. The first pickling bath is a boiling hot, 6 oz./gal. concentration of a Briggs-formulated alkali cleaner. The pickling operation is followed by a water rinse. The second pickling bath is a 1 per cent-by-weight concentration of sulfuric acid maintained at 140 deg. F. and having the effect of etching the surface of the metal to a uniform roughness or "tooth." This tooth results in finger-like protuberances of pure iron, which subsequently become embedded in the porcelain enamel coating. A water rinse follows the sulfuric etch and this in turn is succeeded by immersion of the work in single nickel salts at 160 deg. F., concentration 2¼ oz./gal. The nickel salts tend to produce a still better bond between the ground coat and the metal. The work is given another rinse and a final dip in neutralizer consisting of borax-soda ash mix held between 180 and 200 deg. F. The neutralizer dip is followed by a final rinse, as shown in Fig. 1.

The porcelain enamel stock for Briggs Beautyware is supplied in the form of glass-like granules or "frit" by the Pemco Corporation of Baltimore. Essential ingredients of frit include feldspar, fluorspar, borax, and certain silicates, all of a high grade of purity. In addition to these main ingredients, the frit used by Briggs for the production of a ground coat contains a salt of cobalt. This acts somewhat like a flux in the case of solder, to produce a good bond with formed metal. Cobalt plus steel and porcelain actually results in a steel-porcelain alloy. In practice, the ground coat frit is sprayed on the surface of the prepared fixture and is dried, fired, and allowed to cool. The process is then repeated, once with the first white coat, and once again with the second.

Whether you want to dehydrate cod fish, dry a finish, bake ceramics, cure hides . . . or what have you . . .

. . . there's a G-E infra-red lamp for your job!



Quick heat at low cost. That's what you get with General Electric industrial infra-red lamps and that's why they're being used successfully for so many jobs throughout industry. Preheating metals, thermo-setting cement, accelerating chemical reactions, drying plywood — to name just a few.

Infra-red is inherently your most flexible source of radiant energy for industrial processes. Efficient ovens can be designed to fit any production scheme. And now the wider selection of types and sizes available in G-E infra-red lamps makes it even easier to select the *right* oven for *your* job.

Remember, whatever infra-red lamps you need, General Electric makes 'em all! The full line includes sizes from 125 to 1000 watts, in both reflector and clear bulb types. For full information, consult a recognized infra-red oven manufacturer, or call your nearby G-E Lamp office. General Electric, Lamp Dept., Nela Park, Cleveland 12, Ohio.

G-E LAMPS
GENERAL ELECTRIC

Frit as purchased is supplied in sealed bags, which are stored in Briggs' frit storage room. The bags are transported by cart as needed to any one of a number of porcelain lined chutes leading to china ball mills on the floor below. Frit coming down these chutes enters the ball mills, which are porcelain lined and contain solid porcelain balls 2 inches in diameter. In these, the frit is milled to 200 mesh. It then passes into wooden tanks, where magnetic separators remove any incidental ferrous material which might accidentally have been picked up in processing. The frit then goes to huge porcelain enameled frit storage tanks, from which it is removed to shop tanks as needed. At no stage is metal allowed to touch the frit, and every care is taken to avoid any possible contamination. All frit sludge otherwise lost through overspray is collected, reclaimed, and reprocessed under controlled conditions to be used properly mixed with new frit for ground coats only. Briggs engineers also make use of modern additions such as small percentages of clay and bentonite, which act as suspending agents.

Ground coat frit is applied in water-washed spray booths of Briggs' own design, using both DeVilbiss and Binks spray guns, as shown in Fig. 2. Each operator has his head and shoulders covered by a well-fitting hood. A lightweight flexible air hose enters the hood from behind and keeps the operator supplied with a steady stream of fresh, conditioned air. Other systems of ventilation have been tried, however, employees prefer this one. Actually, spray operators breathe the purest air in the plant.

After the ground coat has been sprayed on the parts, they are conveyed through a Briggs-engineered, steam heated dry-off oven. Steam unit heaters are used to heat the air for this oven, the air coming down through parallel rows of nozzles arranged along the top of the oven and directed downward on the parts. As the air comes in contact with the parts, it has a temperature of 175 deg. F., which dries the frit to a bone dry condition without any danger of ebulition and frit loss through too rapid heating at too high a temperature.

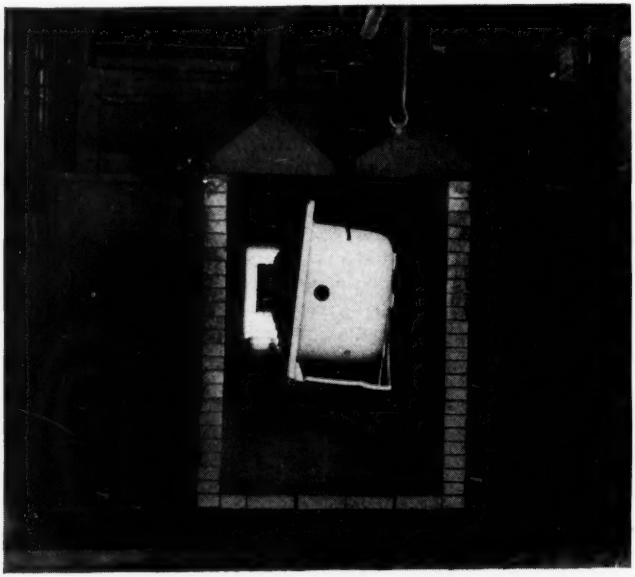
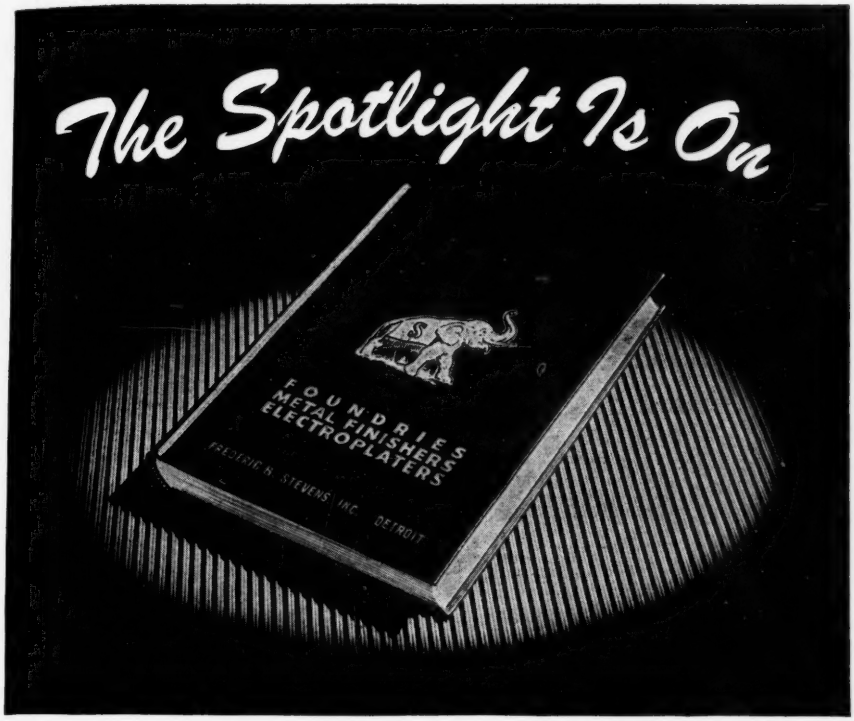


Fig. 5 — View looking into Briggs continuous porcelain enamel firing furnace. Intense heat area is firing zone where temperature is maintained at 1,550 deg. Fahrenheit.



Our New Catalog No. 30—prepared as a service to metal finishers—is the most complete and up-to-the-minute book of its kind ever published . . . a veritable

METAL FINISHING ENCYCLOPEDIA

It is truly much more than a catalog of equipment and supplies, for within its pages is an accumulation of information embodying advanced developments in modern metal finishing practice.

The edition is sufficient to supply a copy to every metal finishing plant in the United States and Canada. Distribution is just beginning, and will be completed within a few weeks.

FREDERIC B. STEVENS INCORPORATED

DETROIT 26, MICHIGAN

- NEW ENGLAND — 166-182 Brewery St., New Haven, Conn.
- NEW YORK and PENNSYLVANIA — 93 Stone St., Buffalo, N. Y.
- INDIANA — Hoosier Supply Co., 36 Shelby St., Indianapolis, Ind.
- CANADA — FREDERIC B. STEVENS OF CANADA, LIMITED, Windsor, Ontario; 1262 McDougall St.; 2368 Dundas St., West, Toronto, Ontario

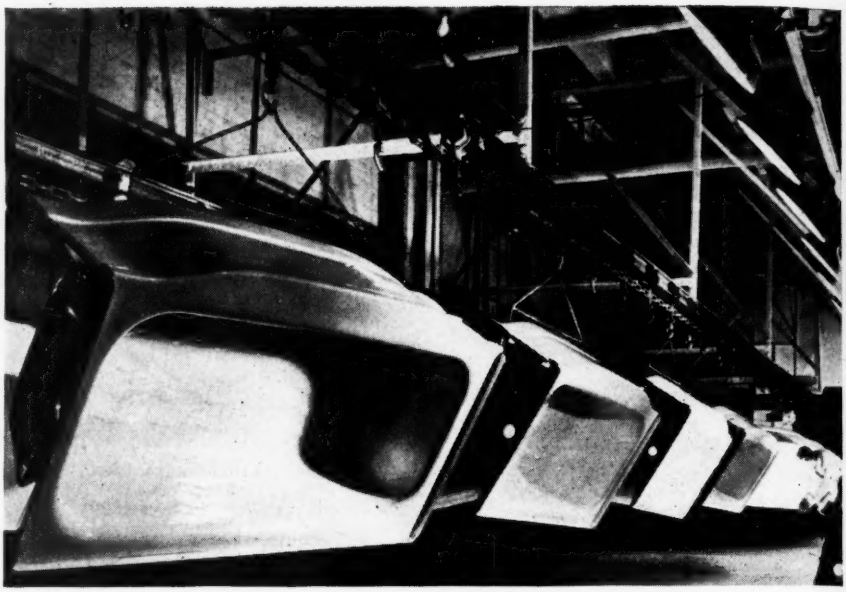


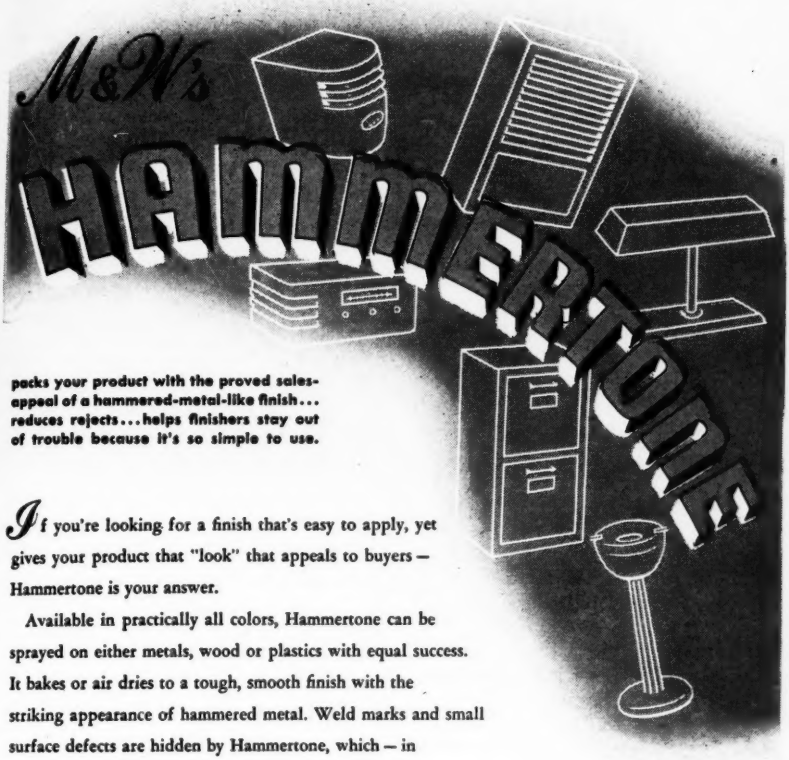
Fig. 6—View of final inspection line where Briggs Beautyware fixtures are inspected immediately following firing of the third porcelain enamel coat

After dry-off, the fixtures are passed at the rate of 10 feet per minute through the three sections of the ground coat firing furnace. The sections in order are preheat, firing, and cool-off. The plant has three firing furnaces altogether, one being used for each coat of frit. One furnace is 82 feet long, the others are both 132 feet in length. All are lined with refractory brick and have common brick exterior linings. The newest furnace, one of the 132-foot type, has an additional outside lining of sheet steel. In the case of all furnaces, expended heat, before going to the stack, is passed under the entrance section of the furnace so as to preheat the parts as they enter.

Each furnace is equipped with an electric eye-mirror combination which sets up an optical beam traveling the length of the furnace. If a fixture should fall from the conveyor during passage through the furnace, it would break this light beam. This in turn would set off an alarm so that the fixture could be removed in time to prevent damage to the refractory lining or to other parts on the conveyor. Furnaces are of the continuous gas-fired type manufactured by the Boland Furnace Co., St. Louis, Mo. The firing temperature is 1,550 deg. F. (red heat), and the passage time for each fixture is 13 minutes.

Parts emerge from the firing furnace covered with the characteristic glaze of an alloy of steel, cobalt, and porcelain, as shown in Fig. 3. To this ground coat are added in succession two coats of white porcelain enamel. These are applied, dried, and fired in much the same manner as the ground coat (see Figs. 4 and 5), each on its own individual line. A vegetable dye is mixed with the frit for the final

Sure Cure for Finishing Room Headaches...



packs your product with the proved sales-appeal of a hammered-metal-like finish... reduces rejects... helps finishers stay out of trouble because it's so simple to use.

If you're looking for a finish that's easy to apply, yet gives your product that "look" that appeals to buyers — Hammertone is your answer.

Available in practically all colors, Hammertone can be sprayed on either metals, wood or plastics with equal success. It bakes or air dries to a tough, smooth finish with the striking appearance of hammered metal. Weld marks and small surface defects are hidden by Hammertone, which — in addition to its uniform results in application — reduces rejects to a minimum.

For further information, write for Technical Bulletin #115 or ask your M&W representative. Color card is available.

PIONEERS IN PROTECTION
M&W Co. 1876

... where industry goes with finishing problems

MAAS & WALDSTEIN COMPANY NEWARK 4, NEW JERSEY

1658 Carroll Avenue, Chicago 12 • 6 Jersey Street, Boston 15 • 10751 Venice Blvd., Los Angeles 34

PRODUCERS OF LACQUERS, ENAMELS, SYNTHETICS AND SPECIALIZED PRODUCTION FINISHES

Fig. 7—Typical bathroom arrangement involving Briggs Beautyware porcelain enameled plumbing fixtures

white coat so that the spray operator can see it against the white of the preceding coat. This dye is completely burned out during final firing. Each coat fuses and bonds with the coat beneath, with no stratification. The net result is a single solid layer of pure porcelain, as shown by X-ray crystal lattice analysis. Immediately following firing of the third porcelain coat, Briggs Beautyware fixtures are given a final inspection, as shown in Fig. 6.

Nearly three miles of monorail traverse Briggs' enamelware plant, supporting the 75 bath tubs or 300 lavatories, or 300 sinks which are finished each hour. The fixtures are suspended from the monorail on hooks, from which they are hung by special brackets. These brackets are welded onto and become integral parts of the Beautyware fixtures themselves. All fixtures are completely sheathed in porcelain enamel on all surfaces.

In order to produce desired tonal qualities, a last operation on the bath tub, for instance, consists of spraying an insulating layer of sound deadener on the exterior bottom surfaces. The psychology in back of this operation is interesting and shows the extent to which the Briggs Manufacturing Company will go to satisfy its customers. The customer is always right, even when he's wrong. It is a false and extremely mistaken impression on the part of some people that strength is synonymous with massiveness, and that a thing can be neither stout nor durable without associated ponderosity of sound when struck. Whereas the enlightened realize the falsity of this notion, the unenlightened must also bathe.

Figure 7 shows a typical bathroom arrangement involving the use of Briggs Beautyware porcelain enameled plumbing fixtures.

YOU'LL SAVE TIME —AND MONEY!

Half the coating material, higher productivity per machine hour . . . plus a higher quality finish—radio tubes at RCA Victor, Harrison, N.J.

75% less labor required, production increased . . . paint cost per unit cut more than 50%—folding chairs at Clarin Mfg. Co., Chicago, Illinois.

Consistently uniform finish on matching wall panels . . . continuous production with almost 50% savings in paint—Martin-Parry Corp., York, Pa.

Twice the production in much less booth space . . . paint goes three times as far, and finish is improved—bicycle lamp shells at Delta Electric Co., Marion, Indiana.

Let RANSBURG test coat your product . . . and demonstrate the quality control and savings YOU can effect!

For a more complete explanation of the way Electrostatic Spray-Painting can meet your finishing requirements, please write for our new booklet . . . without obligation.

1248 BARTH AVENUE • INDIANAPOLIS 7, INDIANA

GLYCERINE in Electrolytic Treatment of Aluminum and Its Alloys

By GEORGIA LEFFINGWELL, Ph.D. and MILTON A. LESSER, B.Sc.

GLYCERINE has long been associated with many phases of aluminum treatment, especially electrolytic processes. The use of this versatile substance has now been extended to the comparatively new field of electrolytic polishing.

During the last decade or so, a number of commercially successful methods for coloring aluminum and its alloys have been introduced, and new procedures and improvements are constantly being developed. Glycerine enters into the formulation of the electrolytic solutions employed in many of these "anodic" processes. It is a standard component of some of the better known, well-established electrolytic solutions (1).

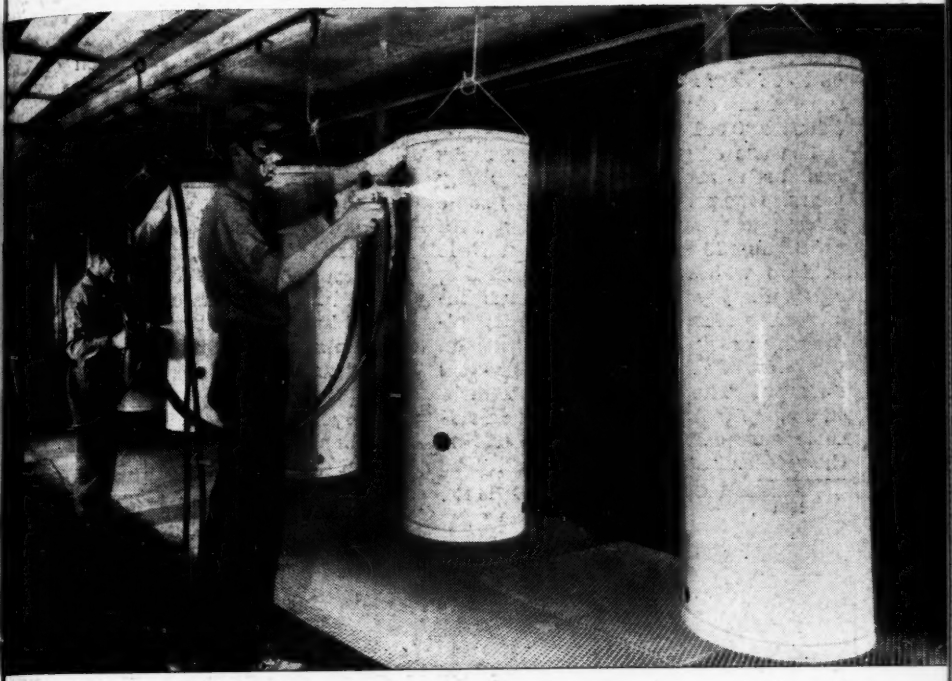
Being a silvery-white metal, aluminum provides a background readily adaptable to coloring. Since all aluminum salts are colorless, the metal itself cannot be tinted by producing salts on its surface. However, this difficulty can be overcome and aluminum can be colored in almost any hue by first producing an oxide coating and then subjecting this treated surface to the action of dyes or to the effects of a number of suitable inorganic salts (2). The oxide coatings produced by anodic treatment are not only beautiful but exceedingly hard and tough. They improve both the corrosion resistance of the aluminum as well as its abrasion resistance (2, 3).

Many methods for anodizing aluminum are available, but those based on electrolytes containing sulfuric acid, chromic acid, or oxalic acid are said to be the most commercially important (4). Used in these and other solutions, glycerine serves a number of essential functions. Primarily, it acts as an inhibiting agent to prevent undue or excessive etching of the metal and helps to produce a smooth, white surface. In sulfuric acid baths, for example, it has been found that the addition of glycerine to the anodic oxidizing electrolyte decreases the solubility of the aluminum and facilitates the formation of a more plastic film. The amount of glycerine employed varies considerably, ranging from substantial proportions to minute quantities.

Commercial practice and authoritative opinion point to sulfuric acid solutions as the most widely used anodic electrolytes. As remarked by Young (2), such solutions produce coatings most suited for coloring because the film formed, integral with metal, is practically colorless, transparent, and hard. Such solutions are also preferable from the standpoint of cost, safety, and speed. In a process described by this worker, aluminum is made the anode in a solution containing 100 to 1,500 grams of sulfuric acid (specific gravity 1.86) per liter.

(1) Leffingwell, G. & Lesser. M. A.: Metal Finishing 41:272, May 1943
(2) Young, C. B. F.: Prod. Eng. ,Feb. 1939, p. 57; Steel, Mar. 13, 1939, p. 60
(3) Anon.: Metals & Alloys, Aug. 1940, p. 205
(4) "Anodizer": Machinery (London) 55:137, Nov. 9, 1939

HIGH HEAT-RESISTANCE



WITH R-M ENAMELS...

LARGE midwestern manufacturer of oil-ming space heaters, hot water heaters and icle heaters (name on request), uses R-M mels and undercoats practically 100%.

s manufacturer has come to appreciate value of individualized R-M customer rice. For R-M enamels were especially ulated to meet their needs . . . calling for heat-resistance, toughness, hardness, itive color retention, gloss and a high ree of adhesion and flexibility. More ails? Just drop us a line.

R-M

NSHED-MASON COMPANY 5935 MILFORD AVE. DETROIT 10, MICH.

About 2 grams of glycerine per liter are included as an inhibitor to prevent excessive etching. Current density should be from 15 to 25 amperes per square foot for 15 to 20 minutes, with the temperature maintained at from 65 to 95 deg. F. The coatings formed are found to vary in thickness from 0.0003 to 0.001 inch.

The use of glycerine in such baths has been recommended for many years. One process patented (5) some years ago specifies the use of a bath containing 60 to 77 per cent of sulfuric acid to which is added a retarding agent like glycerine. The layer formed on the aluminum may then be colored by precipitation of a pigment in the pores of the coating by a chemical reaction. The various well-established commercial processes based on sulfuric acid call glycerine into use as the most suitable addition agent. The "Alumilite" process, for example, involves the addition of ammonium sulfate plus glycerine as a retarder to 15 to 20 per cent or 60 to 70 per cent sulfuric acid, while the Tennents method specifies the addition of 15 per cent by volume of glycerine to 65 per cent by volume of sulfuric acid. The "Anotint" process uses 33 per cent sulfuric acid plus glycerine, carbohydrates, or metal (4).

The chromic acid bath is used chiefly to produce coatings with maximum resistance to corrosion. It is especially useful where lap joints are encountered. Because the oxide layers produced have a slight gray tint, anodizing with chromic acid is not extensively used when it is desired to color aluminum and its alloys (2). The role of glycerine in the chromic acid anodizing process is illustrated in a patent (6) calling for the use of an

(5) Aluminum Colors, Inc.: Fr. Pat. 718,144, 1931

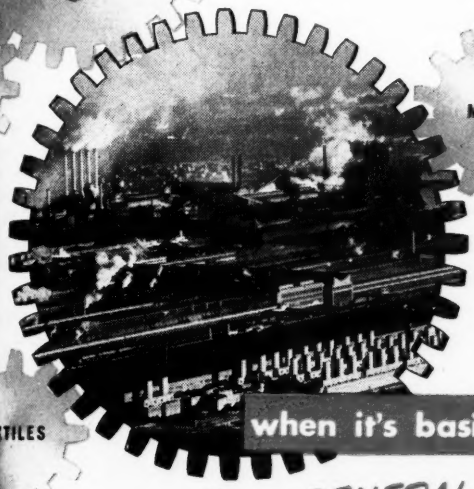
(6) Windsor-Bowen, E. & Gower, C. H. R.: Brit. Pat. 537,474, 1941

For
DEGREASING • WASHING • RINSING
PICKLING and DRYING of METAL PARTS
DEGREASERS
PICKLERS
Standard and Special Types of equipment from the smallest to the largest sizes for a wide variety of metal degreasing, washing, cleaning, rinsing, pickling, drying and allied operations.
Send for illustrated bulletin
OPTIMUS EQUIPMENT CO.
ENGINEERS AND MANUFACTURERS
15 WATER STREET, MATAWAN, N. J.
WASHERS
DRYERS
OPTIMUS EQUIPMENT
FOR CLEANING · RINSING · DEGREASING · PICKLING AND DRYING OF METAL PARTS

CHEMICALS

GENERAL CHEMICAL COMPANY

GEARED TO THE NEEDS OF INDUSTRY



METALS

WATER & SEWAGE

LEATHER

TEXTILES

PETROLEUM

SOAP

GLASS & CERAMICS

DRUGS

when it's basic chemicals

... call on GENERAL CHEMICAL first!

The General Chemical Company Sales and Technical Service organization works shoulder to shoulder with Industry . . . constantly alert to changing chemical demands in every field. Closely coordinated with it are the Company's progressive research program, and extensive—yet extremely adaptable—production facilities.

This way, General Chemical products are always geared to the needs of Industry . . . their grades and strengths meeting the most exacting requirements of the day. From such closely meshed efforts are coming General Chemical's new organic and inorganic chemicals for the process industries of tomorrow. The past stands proof that these, too, will be equally essential "Basic Chemicals for American Industry."

GENERAL CHEMICAL COMPANY

40 Rector Street, New York 6, N. Y.

Sales and Technical Service Offices: Albany • Atlanta • Baltimore • Birmingham Boston • Bridgeport • Buffalo • Charlotte • Chicago • Cleveland • Denver Detroit • Houston • Kansas City • Los Angeles • Minneapolis • New York Philadelphia • Pittsburgh • Portland (Ore.) • Providence • San Francisco Seattle • St. Louis • Wenatchee • Yakima (Wash.)

In Wisconsin: General Chemical Wisconsin Corporation, Milwaukee, Wis.

In Canada: The Nichols Chemical Company, Limited • Montreal • Toronto • Vancouver

BASIC CHEMICALS

GENERAL CHEMICAL COMPANY

FOR AMERICAN INDUSTRY

electrolyte composed of 3.5 to 7 per cent of chromic acid and 1 to 3 per cent of glycerine. Formaldehyde and boric acid in a proportion of 0.3 to 0.5 per cent may be added, if desired. Soluble chromates in a quantity not exceeding 2 per cent are also a preferred component of the bath.

Oxalic acid baths are generally used to produce reflector surfaces. Oxalic process oxides may range from light yellow to dark bronze, according to thickness and the alloying agents present (7). Small quantities of glycerine are used in an anodizing electrolyte containing oxalic acid as the major ingredient plus smaller quantities of sulfuric acid, aluminum sulfate, and boric acid (8, 9).

From this it is evident that glycerine may be used in aluminum anodizing baths based on either organic or inorganic acids or combinations of such chemicals. One departure from the usual run of anodizing solutions is a non-aqueous solution composed of a borate or one of several organic acids in glycerine, with or without other suitable additions (10). Various metallic salts may be included to obtain certain desired effects. In one case (11), salts of Zirconium, thorium, or titanium are recommended for use in the electrolytic surface-treatment of aluminum and its alloys. Unusual and interesting results are readily obtainable with the specified glycerine-containing baths.

Glycerine is a recommended adjunct in processes whereby aluminum and its alloys are coated by anodic treatment in alkaline solutions. According to Sheppard's (12) patent, a suitable bath of this type consists of:

Sodium hydroxide (98%)	20.0 gm.
Glycerine	150.0 c.c.
Water	1.0 liter

This, and other specified baths, are operated at 10 to 15 volts with a current density of 18 to 24 amperes per square foot at a temperature of 15 to 25 deg. Centigrade.

In recent years, electrolytic polishing, long a valued tool in the hands of the metallurgist, has been adapted for commercial practices. Glycerine is a valuable aid in many of these modern processes. As pointed out in a somewhat recent review (13) on electrolytic polishing, the most obvious application for this process is in improving the appearance, brilliance, and color of metal products. Electropolishing, it was noted, offers a new methods for imparting a "finished" or "quality" appearance to work previously left unfinished because of intricate shape or other elements not readily amenable to mechanical methods.

Many articles are so shaped that

(7) Rohrig, H.: Z. Ver. dent. Ing. 84:223, 1940
(8) Mullens, J.: Austral. Pat. 110,263, 1940
(9) Byrne, C. R.: Brit. Pat. 548,864, 1942

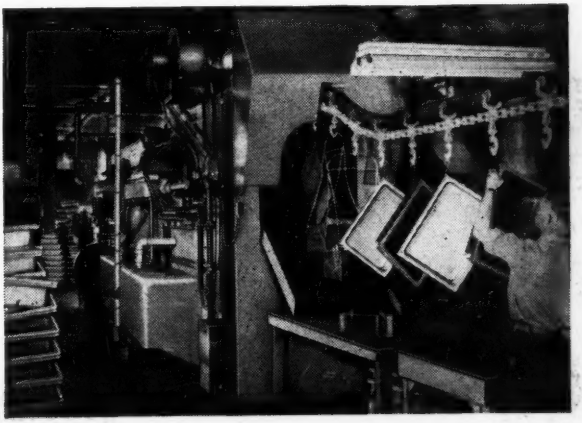
(10) Lichoff, V.: Brit. Pat. 466,941, 1937
(11) Schenck, M.: Brit. Pat. 491,618, 1938
(12) Sheppard, S. R.: Brit. Pat. 429,344, 1935
(13) Anon.: Steel, Sept. 10, 1945, p. 104

START RIGHT!
INSURE A PERFECT FINISH
DETROIT
Handy 'Tac' Rags
(Trade Mark Reg.)
Remove all Dust, Lint and Sand Particles from the Surface before Finishing.
Successfully used by leading Industrial Plants for over 11 years.
If your local Paint Dealer cannot supply you, write to Manufacturer.
Detro Sales Co.
414 NORTH SAN PEDRO ST.
LOS ANGELES 12, CALIFORNIA

RANSOHOFF

THE GREATEST NAME IN ENGINEERED CLEANING

ONE-MAN OPERATION and your COSTS GO DOWN



Equipped with Ransohoff Packless Centrifugal Pump and Ransohoff Uni-Drain

CONTINUOUS...STREAMLINED WASHING, RINSING *and* DRYING

THIS machine turns out perfect cleaning day in and day out . . . all you have to do is to make the service connections and it's ready to go. Engineered and built to maintain quality cleaning.

RANSOHOFF ENGINEERS, (there's one near you) will be glad to call on you to figure out how you can save time and money on cleaning

N. RANSOHOFF, Inc.

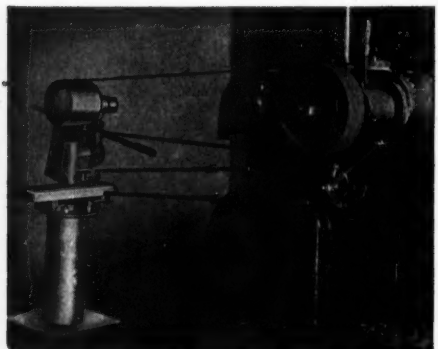
1311 TOWNSHIP AVE., CINCINNATI, OHIO

standard mechanical polishing operations are not only difficult, but often impossible. Electropolishing, with its ability to get into corners, crevices, and recesses of intricately shaped objects, often provides the answer to many of these problems (14). Indeed, as Wernick (15) has remarked, the more curved the surface, the more readily it can be adapted to electropolishing methods.

Electropolishing has many other applications. It is valuable, for example, as part of electropolishing procedures, benefiting both the base metal and the plated surfaces (14). With this method, many combinations of two-tone relief effects are possible and practicable, lacquers being used to "stop-off" surface areas or parts that are to remain unattacked anodically.

The advantage of using glycerine in electropolishing processes was brought to the fore in 1940, when Uhlig (16) reported that the optimum polish was obtained on stainless steel by the use of an electrolyte consisting of phosphoric acid, glycerine, and water. In explaining the value of glycerine, this worker pointed out that one of its functions is to prevent attack of the anode by chemical (e. g. acid) action, independent of anode attack. In other words, glycerine serves to prevent etching of the metal surface. In addition to this important effect, glycerine also facilitates the electrolytic action. Glycerine - containing electrolytes soon began to find important applications in the electropolishing of other metals, particularly alumium. In 1941, for example, European workers (17) found that a rapid method (18)

(14) Bregman, A.: The Iron Age, Jan. 9, 1941, p. 29
(15) Wernick, S.: Canad. Metal & Metallurg. Ind., Mar. 1944, p. 29
(16) Uhlig, H. H.: Trans. Electrochem. Soc., Vol. 78, 1944, preprint No. 25, 8 pp.
(17) Hauffe, K. & Tillig, R.: Metallwirtschaft 20: 994, 1941
(18) De Sy, A. L. & Halmers, H.: Stahl u. Eisen 61: 185, 1941



DATA: Easily reversible to R.H. or L.H.; 5" side adjustment on Needle Bearings with Remote Control; Hydraulic Shock Absorber lowers weight slowly; easily tracks ¾" to 6" belts from Remote Control; Large Bearings Mounted in Arm for Lower Bearing Speeds, sealed for life with Non-Friction Grease Seals; Large Belt Length Adjustment; Counter Weighted for Steady Accurate Pressures.

DUAL REMOTE CONTROL*

MAKES THE

NIEDERST

Back Stand Idler

— the most versatile in the field!

***Remote Control for Operation Ease**—idler pulley arm swings on a turret enclosing angular adjustment mechanism. Levers conveniently located on lathe allow control of both angular and wide range of lateral adjustments from operator's normal working position.

A host of other innovations achieved by the NIEDERST BACK STAND POLISHER, have earned it the title of "World's Workingest Idler." For better, faster, smoother abrasive belt polishing — *investigate NIEDERST now!*

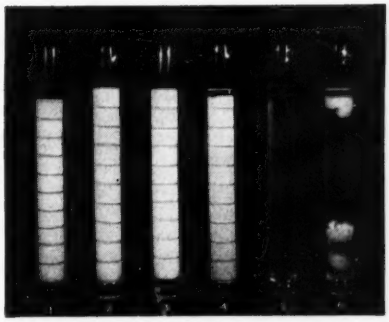
Order from your dealer, or direct.

NIEDERST COMPANY

3506 S. MICHIGAN AVE., CHICAGO 15, ILL.

Emlon ranks high in the metal-cleaning field!

Wyandotte Emlon is a new detergent of the solvent emulsion type. This versatile product is especially made to meet *all* requirements for such a cleaner—as determined by the experience of Wyandotte Service Engineers.



Unretouched photograph showing the comparative stability of Emlon (1, 2 and 3) and a leading competitive product (4, 5 and 6).

Illustrated are the following 5% emulsions, after standing for 24 hours:
(1) Emlon in tap water; (2) Emlon with 2.5% of sulfuric acid added; (3) Emlon with 2.5% of caustic soda added; (4) Competitive product in tap water; (5) Competitive product with 2.5% of sulfuric acid added; (6) Competitive product with 2.5% of caustic soda added. Note separation, or complete breakdown, of 4, 5 and 6.

This illustrates the unusual *stability* of emulsions formed with Emlon. This stability results in better and faster cleaning action, longer cleaning solution life and low cleaning costs.

Ask your Wyandotte Service Engineer about this new and different product and its many applications—or write directly to us for descriptive literature.

Wyandotte
REG. U. S. PAT. OFF.

WYANDOTTE CHEMICALS CORPORATION
WYANDOTTE, MICHIGAN • SERVICE REPRESENTATIVES IN 88 CITIES

for electropolishing alumiuum and aluminum alloy specimens could be improved further by adding glycerine, as follows:

Alcohol	97.0 c.c.
Glycerine	97.0 c.c.
Ethyl ether	6.0 c.c.
Perchloric acid (1.12 gm. per c.c.)	50.0 c.c.

At a current density of 2,000 to 3,000 amperes per square decimeter, good polishing results were obtained with aluminum-magnesium, aluminum-copper-magnesium, aluminum-zinc-magnesium, and aluminum-manganese alloys.

Somewhat later, in their discussion of anodic polishing, Mathers and Ricks (19) reported that aluminum was successfully polished in a bath containing 12 c.c. of concentrated sulfuric acid and 24 c.c. of glycerine electrolyzed at 0.25 ampere for 20 minutes.

The value of glycerine in these newer applications is evident also in recent patent literature. An anodic process (20), though applicable to the anodic polishing and brightening of pure and commercial grades of aluminum and aluminum alloys, is particularly suitable for alloys containing from 2 to 20 per cent of silicon. The process is adaptable to the treatment of both cast and wrought aluminum-silicon alloy items. In an indicative example, aluminum castings containing 5 per cent silicon are anodically brightened by anodizing for ten minutes in the following electrolyte with a current density of 1.5 amperes per square inch at a temperature of 77 deg. F.:

Hydrofluoric acid	13 per cent
Glycerine	52 per cent
Water	35 per cent

After removal from the brightening bath, the objects are washed with water and then immersed in a hot potassium dichromate solution for about one minute to remove the smudge or soft superficial film. It is claimed that the effect of this process is uniform over the surface of the object being treated and that severe etching is completely eliminated.

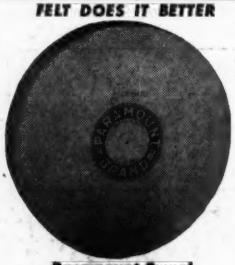
In technical circles, electropolishing is usually considered to be the reverse of electroplating. Thus, in electroplating, the work is made the cathode and metal is added; whereas in electropolishing, the object is made the anode and metal is removed (13). This principle has recently been made the basis of an electrolytic method for brightening and smoothing the surfaces of a number of industrial metals, including aluminum. According to patent (21) claims, this electrolytic process may be used for accurately sizing manufactured metal objects, for removing burrs and machine

(19) Mathers, F. C. & Ricks, R. E.: Proc. Indiana Acad. Sci. 53: 130, 1943

(20) Tosterud, M.: U. S. Pat. 2,375,394, 1945; Canadian Pat. 428,644, 1945

(21) Edmonson, R. W.: U. S. Pat. 2,382,549, 1945

FELT DOES IT BETTER



Paramount Brand

FELT WHEELS

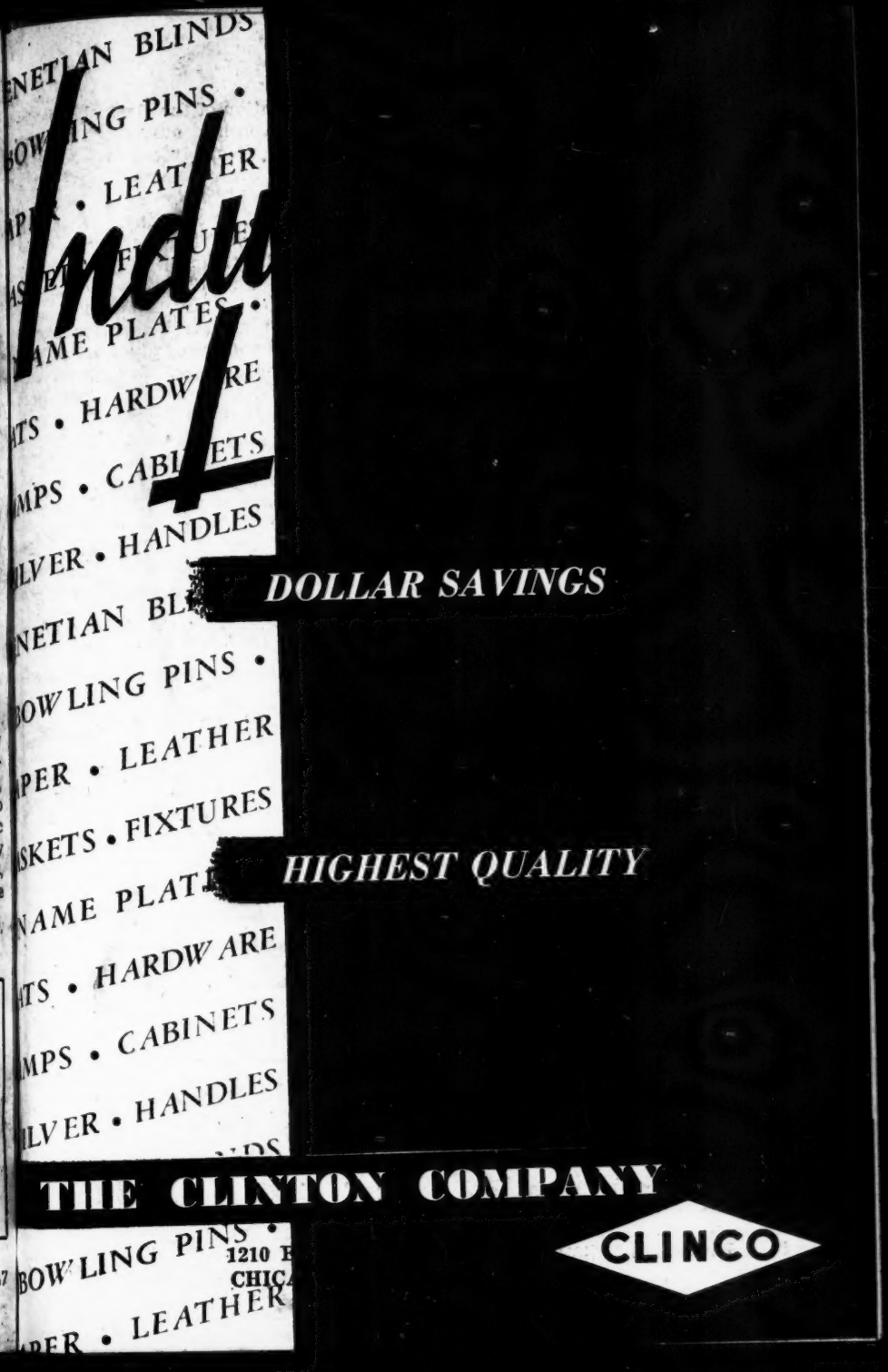
Superior for Polishing and Buffing

When you order FELT WHEELS specify PARAMOUNT BRAND FELT WHEELS for top quality and uniformity.

BACON FELT CO. WINCHESTER, MASS.

Established 1824

"America's Oldest Felt Manufacturer"


ENETIAN BLINDS
BOWLING PINS •
APER • LEATHER
ASKETS • FIXTURES
NAME PLATES •
ATS • HARDWARE
AMPS • CABINETS
ILVER • HANDLES
Indu
4
DOLLAR SAVINGS
ENETIAN BL
BOWLING PINS •
APER • LEATHER
ASKETS • FIXTURES
NAME PLAT
HIGHEST QUALITY
ATS • HARDWARE
AMPS • CABINETS
ILVER • HANDLES
THE CLINTON COMPANY
BOWLING PINS •
1210 E
CHIC
APER • LEATHER
CLINCO

marks, for removing metal in excess of tolerance to certain size specifications, and for symmetrically removing surface material from and brightening the inaccessible parts of metal objects.

These various effects may be achieved through the use of an electrolyte consisting preferably of 25 per cent of hydrochloric acid and 75 per cent glycerine by volume. The cathode immersed in this electrolyte is preferably of an area equal to or larger than the area of the anode, which consists of the object to be treated. The current density employed varies with the metal being treated, but for aluminum 1 ampere per square inch is considered best. A particular advantage of this hydrochloric acid-glycerine electrolyte is its high conductivity, so that the temperature does not rise appreciably at the current densities required. Thus, no artificial cooling is needed, the process being carried out at normal room temperature. However, agitation of the electrolyte is desirable. Another advantage is that when the electrolyte loses some of its effect, after a considerable time, it may be rejuvenated by adding up to 10 per cent of acetone. With this method, it is claimed, the amount of metal to be removed may be readily controlled and the process may be adapted to high precision work.

Before concluding, mention should be made of the use of glycerine in electroplating processes. Thus, in a method reported (22) from Europe, pure manganese can be deposited on iron, aluminum, copper, brass, or bronze from aqueous sulfate solutions containing manganese sulfate, ammonium sulfate, and glycerine. When the electrolyte is properly employed, a deposit of fine crystalline structure, high luster, and excellent adherence, durability, and hardness is obtained.

(22) Terekhov, I. I. et al: (through) Chem. Abstr. 38:4518, 1944

ZINC PLATERS!

Cleanse & Purify your Zinc Solution with

McKeon's

Zinc-Brite

TRADE MARK REG'D.

Make your Zinc Bright

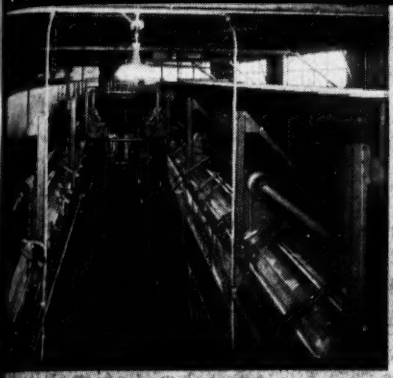
Information free — wire or phone collect — (no obligation, of course)

Sulphur Products Co.

Greensburg 9, Pa.

SYSTEMS

for ENAMEL • LACQUER • PAINT • VARNISH



...w from above Showing Air Filters, Heaters, ... and Operating Mechanism for Electric Scaf... Elevators on Two Mahon Combination Spray ...th-Dryers for Painting Railroad Coaches.

View Showing Exhaust Fans and Motors which Provide the Suction for the Four Hydro-Filter Units Located Directly Below in the Two Combination Spray Booth-Dryers.

. . . from Railroad Coaches to Small Radio Cabinets

The finish on your product will take on a greater importance in the near future when the gap between supply and demand narrows down into a buyer's market. Now is the time to safeguard future sales volume by installing modern Finishing Equipment. Regardless of what your product is—railroad coaches, buses, automobiles, refrigerators, stoves, washers or the smallest radio cabinet—the Mahon organization stands ready to plan, engineer, build and install complete ultramodern equipment to handle your cleaning, rust proofing, drying, painting and baking operations efficiently and economically. Mahon Finishing Systems are in operation all over the world . . . twenty-seven years of experience and pioneering development, in this highly specialized field, have endowed Mahon engineers with a wealth of technical knowledge and practical know-how not available elsewhere. See Mahon's Insert in Sweet's Mechanical Industries File, or arrange consultation.

THE R. C. MAHON COMPANY

HOME OFFICE and PLANT, Detroit 11, Mich. . WESTERN SALES DIVISION, Chicago 4, Ill.

Engineers and Manufacturers of Complete Finishing Systems including: Metal Cleaning Machines, Rust Proofing Machines, Dry-off Ovens, Hydro-Filter Spray Booths, Filtered Air Supply Units, and Drying and Baking Ovens. Also Paint Sludge Reclaiming Units, Hydro-Foam Dust Collectors, and many other Units of Special Production Equipment.

AHON

Finishing Clinic

Recent Developments in the Use of Conversion Coatings on Zinc Plated Steel

By DR. ALLEN G. GRAY

•

A Monthly Digest on Current Technical Progress Indicating Significant Trends and Developments in the Finishing Industry

•

THE surface of electroplated zinc can be treated either anodically or chemically in certain solutions of the chromate type to convert a portion of the zinc to the oxide or the chromate or a combination of the two. The series of coatings thus formed are commonly referred to as **conversion coatings.** Protective coatings formed by converting the surface of a metal into a chemical compound of exceedingly low solubility in the environment to which it is to be exposed have become of importance and are being increasingly used. It is generally recognized that the resistance of most metals to corrosion is related to the formation of relatively insoluble corrosion products on the surface by reaction with non-metallic elements of the surroundings.

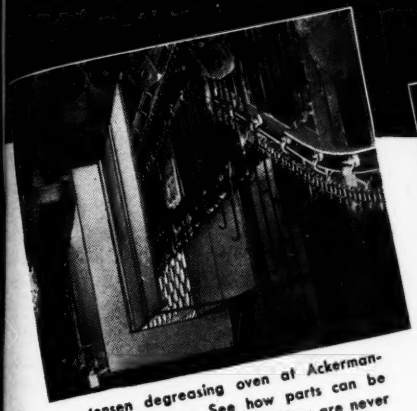
Some of the properties of conversion coatings produced on zinc plated steel by anodic treatment in a suitable chromate type of solution were discussed by J. E. Stareck and W. S. Cibulskis of United Chromium, Inc. before the 34th Annual Convention of the American Electroplaters' Society in Detroit. According to information presented by Stareck and Cibulskis, conversion coatings formed anodically differ from those formed chemically chiefly in that they are integral with the zinc while in the case of the chemical coatings a thin alkaline film separates the coating from the zinc.

It was pointed out that conversion coatings were primarily developed as a means of increasing the corrosion resistance of zinc plated

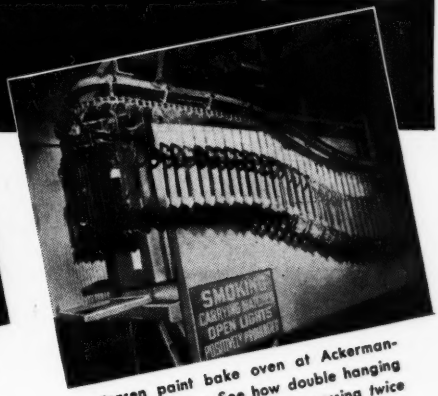
THIS MONTH . . . Recent D velopments in the Use Conversion Coatings on Zi Plated Steel . . . Automa Hot Zinc Galvanizing M Show Advantages in P duction Units . . . Proper Su face Preparation Impor for Porcelain Enameling . Determination of Adhe of Plated Coatings on Alu inum.

1 DEGREASE 2 BAKE PAINT

JENSEN Infra-Red OVENS do *Both*



Jensen degreasing oven at Ackerman-Blaesser-Fezzy. See how parts can be automatically degreased. They are never touched by hand!



Jensen paint bake oven at Ackerman-Blaesser-Fezzy. See how double hanging of parts makes possible processing twice as many parts!

● **PROFIT BY** the experience of Ackerman-Blaesser-Fezzy, Inc., manufacturers of auto hardware and mechanical devices, Detroit. Fire hazards, caused by crowded conditions and necessary use of a high-flash enamel, made use of old-fashioned methods of degreasing and paint baking impossible for them. This firm, like countless others, turned to *safe* Jensen infra-red for *both* jobs. In a room only 9 feet x 72 feet, and in a continuous process, stampings are *automatically* degreased, dipped, drained and paint baked!

Special Offer

Without cost or obligation, we will run laboratory tests on your products, using your finishes. All parts will be returned for your inspection. Act today!

JENSEN SPECIALTIES, Inc. **JENSEN** 9331 FREELAND DETROIT 28, MICH.

DESIGNERS and BUILDERS of "DUAL HEAT" INFRA-RED OVENS • CONVEYORS • PAINT DIP TANKS

steel. With the extensive use of zinc plating on various steel articles, the need became apparent for having a practical means of retarding the white corrosion products which form on zinc, especially in salt atmospheres. In outdoor atmosphere, the exposure of zinc generally produces a thin gray-white film of corrosion products. Stagnant water with limited access to oxygen and water films which dry slowly may produce a non-uniform type of corrosion that may result, in certain cases, in the formation of bulky films of white corrosion products. Thus, these films may hinder the operation of devices or be otherwise objectional. After the conclusion of the war, according to Stareck and Cibulskis, the outward appearance of the conversion coatings became more of a factor and thus stimulated research to uncover new methods, so that now conversion coatings are available which are attractive as well as offering good corrosion resistance.

Corrosion Resistance. The results of a test program conducted to determine the extent to which the conversion coatings increase the corrosion resistance of zinc on steel were reported before the Platers' Convention by Stareck and Cibulskis. "Anozinc" coatings, the designation given the electrolytic anodic treatment by United Chromium, Inc., developer of the process, were applied to several different thicknesses of cyanide zinc electroplated steel; namely, 0.00005, 0.00001, 0.0002, 0.0003, and 0.0005 inch. All test samples were 3 x 1-inch steel strips, and five sets of samples were prepared. Two sets were exposed to accelerated corrosion testing in a standard salt spray cabinet using regular 20 per cent salt spray conditions (U. S. Gov't.

All One Price

ONE SOLVENT FOR ALL METALS OR COMBINATION OF METALS

NEW SCIENTIFICALLY IMPROVED
BLACOSOLV
for SOLVENT VAPOR DEGREASERS

Write today for FREE BOOKLET ON Degreasers and application with Blacosolv.

G. S. BLAKESLEE & CO.

BLACOSOLV DEGREASERS AND SOLVENT

NIAGARA METAL PARTS WASHERS

G. S. BLAKESLEE CO., CHICAGO 50, ILLINOIS · New York, N. Y. · Toronto, Ont.

GET BETTER ACQUAINTED WITH

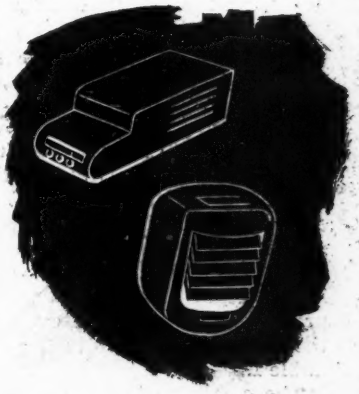
Vedoc Hammeroc

a new one-coat finish

for **AUTOMOBILE HEATERS AND RADIOS**

CHARACTERISTICS:

Hammeroc is an outstanding new *hammered-effect* finish with complete color stability . . . Hard, tough and practically impervious to scratches . . . Highly resistant to heat, moisture and wear . . . Easily kept clean (is unaffected by grease, dirt and automobile cleaning detergents) . . . Available in a wide variety of pastel hues.



APPLICATION:

Only one coat is needed. Finish is sprayed on. No splatter coat of thinner, or special spray gun is required.

BAKING TIME:

20 minutes at 300° F (or equivalent schedule).

Vedoc

All Vedoc finishes are developed for a specific use, then slightly varied to best fit into each customer's setup. For more information about these "better finishes", write . . .

LIQUID PLASTICS DIVISION
FERRO ENAMEL CORPORATION
CLEVELAND 5, OHIO

Table I—Hours to First Rusting in Salt Spray

Coating	Thickness of Zinc Deposit				
	.00005 in.	.0001 in.	.0002 in.	.0003 in.	.0005 in.
Cynanide Zinc Plate	8 hrs.	24 hrs.	72 hrs.	168 hrs.	470 hrs.
Yellow Anozinc (Y-10)	144 "	278 "	398 "	446 "	494 "
Yellow Anozinc (Y-50)			446 "	494 "	518 "
Clear Anozinc (C-10)	144 "	278 "	398 "	564 "	518 "
Clear Anozinc (C-50)			494 "	660 "	494 "
Black Anozinc (B-30)		144 "	350 "	446 "	446 "
Black Anozinc (B-60)			422 "	518 "	660 "
Sealed Black Anozinc (SB-30)		350 "	470 "	494 "	612 "
Sealed Black Anozinc (SB-60)			494 "	518 "	828 "
Unichrome Black Dip (BD-2 min. dip)		422 "		470 "	470 "
Unichrome Clear Dip (CD)		171 "	331 "	371 "	648 "

Specification No. AN-QQ-S-91). Triplicate sets were tested by exposure to South Florida atmosphere. According to Stareck and Cibulskis, frequent inspection of all samples was made and progress of corrosion was recorded until a sample showed 100 per cent rust. It was pointed out that there are two significant points of failure to be noted, especially when testing zinc corrosion and the corrosion of conversion coatings on zinc. One is the appearance of white corrosion, the point where the zinc loses its smooth original surface and starts to chalk up and erode; the other, rusting of the base metal. The length of time that the zinc or coated zinc protects the steel from rusting is also an important measure of its value. The first evidence of rust is important from the aspect of appearance and is the criterion used in the salt spray results reported in Table I.

The corrosion in the South Florida atmosphere was reported to be taking place at a slow rate and that to date, after approximately a one-year period of testing, data are only available with respect to resistance to white corrosion under this exposure. In general, the conclusions drawn from the corrosion tests were that the conversion coatings tested retard formation of white corrosion products on zinc. In most cases, it was reported that a ten to thirty-fold improvement over plain electroplated zinc was obtained. All of the conversion coatings tested were found to increase the protective value of a zinc deposit against rusting of the steel. In addition, it was reported that the conversion coatings afforded the greatest **relative** increase in corrosion resistance on zinc thicknesses of the order of 0.0002 to 0.0003 inch.

In addition to the above tests, experiments were conducted to determine the effect on the corrosion rate of the conversion of impurities in the cyanide zinc solution. The test results showed that zinc deposits obtained from metal-contaminated zinc solutions gave poorer results on tests of the conversion coating. Copper was reported to be the worst contaminant in this respect. Purifying the zinc baths of metal contaminants greatly improved the corrosion test results of treated samples.

Tests were also carried out to determine the effect of surface finish of the base metal on the corrosion resistance of the treated zinc plated surface. In this investigation test panels were prepared by (1) buffing, (2) greaseless finishing, and (3) sandblasting. It was found that the treated zinc which was plated on buffed steel gave the best results; on greaseless finished steel, next best; and on sandblasted steel, poorest results.

Applications. When a simple additional step adds to the corrosion resistance of zinc electroplates, it is not surprising to find its adoption spread-

RECTIFIER "PACKAGES" PROVIDE NEW FLEXIBILITY AT HARTFORD CHROME CORPORATION

Addition of two "2000" units speeds handling of varied plating jobs

Continuing its program of adding dependable, easy-to-use rectifier equipment to meet expanding requirements for plating power, the Hartford Chrome Corporation has recently installed two new General Electric "2000" copper-oxide rectifiers and control equipment. These power "packages," consisting of a fan-ventilated rectifier and an operator's control, have proved invaluable in providing the flexibility needed for an ever-changing variety of work.

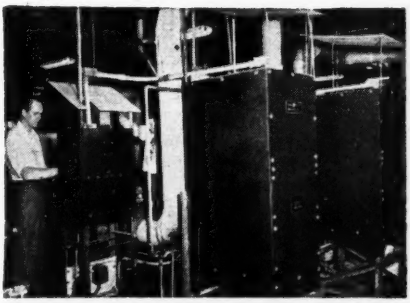
The rectifiers are installed away from working areas, free from injurious fumes. A handy, at-the-tank operator's control governs all operations, permitting instant changes in power input as they are required.

Each rectifier delivers to the plating tank 2000 amperes on one set of bus bars, or 1000 amperes on each of two sets of bus bars. It is also possible to connect the rectifiers in series, to deliver 4000 amperes. Future plans call for the addition of fully automatic motor-operated controls that will keep output voltages constant from "no load" to "full load" within ± 2 per cent of selected reading.

General Electric Equipment Selected on Basis of Past Performance

With the addition of these units, Hartford Chrome now has 12 General Electric rectifiers, with a total rating of 9000 amperes. Most of the equipment has been in operation for four to five years.

During this time, maintenance costs have averaged 25 to 35 per cent lower than those before General Electric rectifiers were installed. On the basis of upkeep, performance, and flexibility, to meet various needs of plating and anodizing, General Electric equipment has proved to be the most economical and efficient that this active plant has ever used.



View shows how rectifiers have been placed in open, nonworking area. Units are easily accessible for cleaning or repair, and are protected from dirt and vapor fumes.

Economies For Your Plant

General Electric copper-oxide rectifiers and controls are readily available in many sizes and capacities, to solve plating or anodizing problems in your plant. They offer many advantages that go a long way in keeping production costs low.

Call on us for engineering assistance, too. We may be able to show you important operating economies, based on the use of efficient General Electric plating equipment.

For information, or for your copy of *General Electric Copper-oxide Rectifiers and Controls*, write to Section A75-1168, Appliance and Merchandise Department, General Electric Company, Bridgeport 2, Connecticut.

GENERAL ELECTRIC

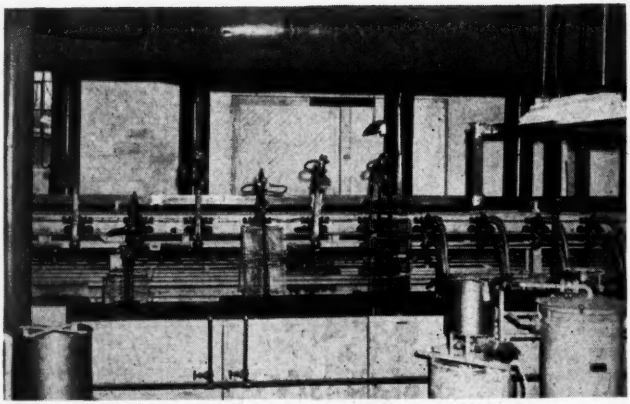


Fig. 1—Fully automatic installation used in the application of conversion coatings to zinc plated refrigerator shelves
(Photo courtesy United Chromium, Inc.)

Stareck and Cibulskis, probably the largest volume user of the conversion coatings at the present time is the refrigerator industry. A number of refrigerator shelves made today are finished in clear Anozinc. To obtain the maximum abrasion resistance, a clear synthetic organic finish is applied over the clear Anozinc. Figure 1 shows an automatic installation which is used in finishing refrigerator shelves in the clear Anozinc finish. A black Anozinc treatment is used to produce a corrosion resistant coating that can also

ing widely in postwar industry. In addition, it was pointed out that many of the types of zinc conversion coatings are attractive in appearance. According to information presented by

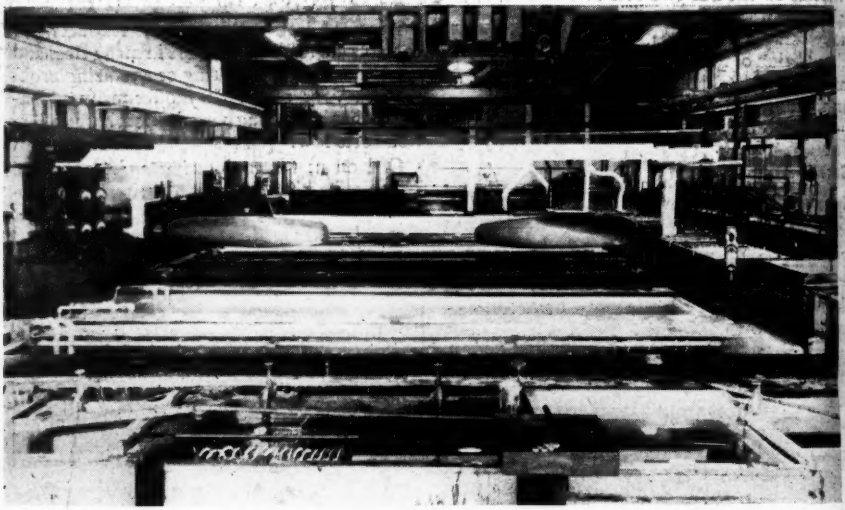


Fig. 2—View of airplane propeller blade manufacturing plant where black "Anozinc" conversion coatings are applied to zinc plated propeller blades
(Photo courtesy United Chromium, Inc.)

Cincinnati

YOU'VE HEARD IT RECOMMENDED . . .

Here is one of CINCINNATI'S 50 ft. streamlined washing machines. A glance reveals its up-to-date, modern features. Every known improvement developed by top-notch cleaning and finishing engineers is utilized.

An important feature is the solution-saving process. The 4-ft. long section (indicated above by the arrow) actually increases the efficiency by fully utilizing the detergent so that MORE METAL CAN BE CLEANED PER POUND OR GALLON OF CLEANER. SOME OF THE COUNTRY'S LARGEST PLANTS VERIFY THIS.

At your invitation, our engineers will lift the cover of this specially designed 4-ft. section and indicate how you can positively add to the efficiency of the detergent you use.

Our latest bulletin describes our machines. If your problem can't be met with these standard designs, our engineers will be glad to construct a special machine to do your job economically. No obligation.

Cincinnati Cleaning and Finishing Machinery Co.
Hecla Street
Ironton, Ohio

Gentlemen:

- I'm interested in learning why the CINCINNATI machine will clean more metal with less solution costs.

COMPANY_____

ATTENTION_____

ADDRESS_____

CITY_____ STATE_____

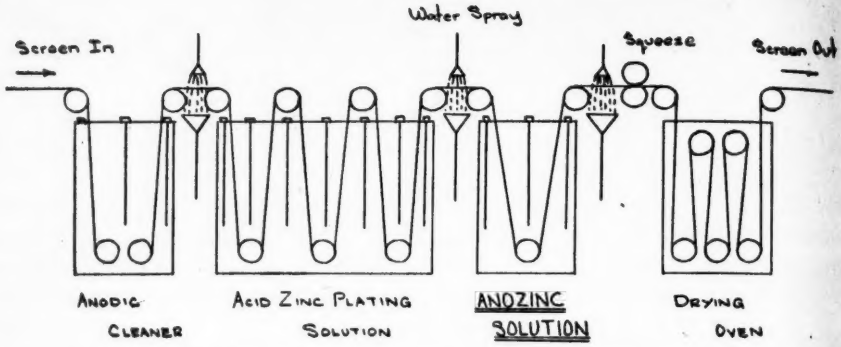


Fig. 3—Schematic flow diagram of setup for processing wire screen cloth utilizing a conversion coating following zinc plating
(Drawing courtesy United Chromium, Inc.)

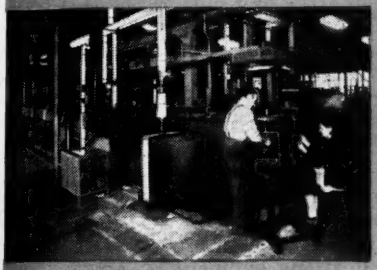
serve as a paint base on airplane propeller blades and other components of a propeller assembly. Figure 2 shows a plant view of one of the large propeller manufacturers using Anozinc on propeller blades. Another application of the conversion coatings, brought out by Stareck and Cibulskis, is the use on wire screen cloth. In this case, yellow Anozinc has been used very successfully, with the processing done on equipment handling continuous strips of wire cloth traveling through the various solutions—cleaning, zinc plating, yellow Anozinc treatment, rinsing, and drying. A schematic flow diagram of such an arrangement is shown in Fig. 3.

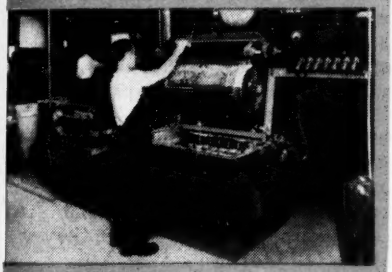
Chemical Dip Treatments. Among chemical dip treatments for zinc plated parts utilizing a chromate type of solution the "Cronak" film process (Proc. Am. Electroplaters' Soc. 1943) developed by the New Jersey Zinc Company (U. S. Patent 2,035,380) has found widespread use on zinc plated parts. Chemical and physical studies reported on the nature of the Cronak film have lead to the conclusion that it is probably a basic chromium chromate. It is characteristic of the film, according to the reported data, that it slowly releases its hexavalent chromium to water which comes in contact with it. It is believed that the dissolved material inhibits the subsequent corrosion of the zinc and ensures that accidentally bared zinc areas are protected.

The "Iridite" dip process (Proc. Am. Electroplaters' Soc. 1944) produces an adherent film on zinc plate and belongs to the general class of chromated zinc coatings produced by chemical immersion treatment. It is reported that chemical studies have shown that the major portion of the Iridite type coating is composed of a chrome gel compound, probably lying within the group of chrome hydroxides or hydrated chrome oxides. The essence of the coating appears to be the chromium-containing compound or compounds. The process, by forming a continuous integrated surface film of chrome gel, inhibits the tendency of zinc coatings to undergo solution, thereby prolonging the life of the coating.

Processes are also available for surface conversion coatings on zinc based on phosphate coatings. In the phosphating operation, the outer surface of zinc is converted into an insoluble phosphate coating, which can serve as a paint base. Thus, the potential uses of zinc conversion coatings in the fin-

UDYLITE Plating Equipment lowers costs improves products at Pyrene . . .





Udylite Plating Barrels and Udylite Automatic Plating Machines are reducing costs and improving the product at the Metal Finishing Division of Pyrene Manufacturing Company.

Makers of the famous Pyrene Fire Extinguishers and Pyrene Tire Chains plate a variety of their own small parts in Udylite Plating Barrels. In addition they do a large volume of diversified plating work for other concerns.

Udylite Plating Barrels are fast and economical in plating parts too small for efficient racking. Springs are cadmium plated—ball checks are tin plated at Pyrene.

The Udylite Automatic Plating Machine does a complete job on the Pyrene Tire Chains. After being loaded in racks, the chains go through various cleaning, rinsing and plating solutions automatically—are not touched or handled until cycle is completed and they are unloaded, fully plated. Udylite Automatics are fast, economical and very compact—require less floor space than any other comparable equipment.

There is a Udylite setup which will do your plating more economically. Ask the Udylite Engineer for details.

2840

Udylite

THE UDYLITE CORPORATION
DETROIT 11, MICHIGAN
REPRESENTED IN PRINCIPAL CITIES

ishing room are numerous and the finishing engineer concerned with quality finishes at maximum economy will certainly want to keep abreast of new developments in this field.

* * *

Automatic Hot Zinc Galvanizing May Show Advantages in Production Units

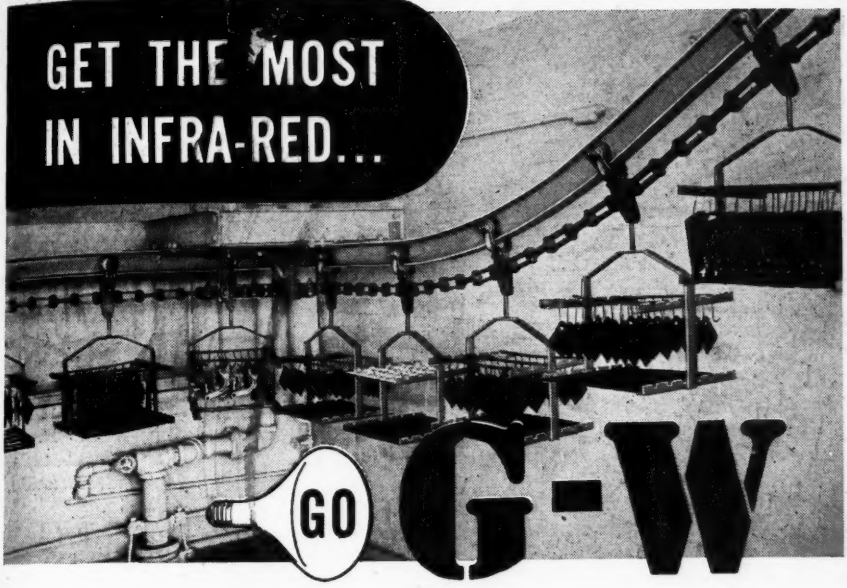
IN discussing production scale installations for automatic hot zinc galvanizing of tanks in a recent issue of "The Iron Age" (July 31, 1947), Raymond F. Ledford of the Hanson-Van Winkle-Munning Company, Chicago, points out that the economic aspects of conveyors as they are and may be applied to hot zinc galvanizing are in many respects the same as when they are employed in other fields of industrial activity. There is the same advantage of better utilization of manpower. Production is often increased, and uniformity of product is the result of maintaining a constant time in each step of the treatment cycle.

Semi-automatic and fully automatic conveyor systems have been used in galvanizing woven wire products, sheet, strip, and pipe. While it is true, as pointed out by Ledford, that the number of conveyors in operation in hot zinc galvanizing departments are very few, those that are in operation have more than proved their worth. While many classes of products are not adapted to fully automatic production, it was pointed out that most products are adaptable to semi-automatic processing. In addition to the applications enumerated above there are several semi-automatic installations in the refrigerator industry for the processing of evaporators. In one plant it was reported that the pickling, rinsing, and fluxing operations are performed on a conveyor. The parts are removed from this conveyor at the kettle, where they are immersed by hand in the molten zinc. After removal from the zinc, the parts are placed on another conveyor by which they are transferred through a quenching operation and subsequent inspection and trimming.

Since the end of the war, as was brought out by Ledford, there have been several full-automatics designed and put into operation for the hot dip zinc galvanizing of steel tanks of one size or another. Shown in Fig. 4 is a schematic layout of a chute arrangement which has been successfully used

ANNOUNCING
Redmont
A NEW RUBBER-COATED
SAFETY GLOVE by Edmont
LOOK FOR THE
RED BAND
New glove offers many advantages to industrial workers handling liquids or wet materials. Heavy rubber coating over strong fabric — oil, grease, acid resisting. New Safety features: ★ THREE NEW LENGTHS, 10" - 12" - 14", ★ NEW FORM FIT PATTERN, ★ CURVED FINGERS, ★ NEW THUMB CONSTRUCTION, ★ NEW RED SAFETY BAND, ★ IMPROVED COATING. This Redmont by Edmont sets new standards of safety for all types of rubber gloves. Order today from your regular suppliers.
Edmont
Fabric-Lined
RUBBER GLOVES
Edmont Mfg. Co., 509 Orange St., Coshocton, Ohio

GET THE MOST IN INFRA-RED...



ANOTHER prominent manufacturer* has "gone G-W" in modernizing the finishing and conveying of parts and now enjoys the maximum advantages of radiant heat. His G-W Infra-Red System gives him:

SPEED—heat is "spot lighted" directly upon the work, processing it in transit.

UNIFORM FINISH—heat is distributed evenly whatever the shape or area of the work.

FEWER REJECTS—tougher finishes produced by infra-red, reduce smudging, chipping or cracking.

ECONOMY—less power, fewer man hours, conservation of floor space.

SIMPLICITY—G-W systems easily handle all operations of de-greasing, spraying, dipping, baking, drying and cooling.

*Y-I- & Towne Mfg. Co. Stamford, Conn.

G-W engineers will gladly discuss how *your* products can be finished and conveyed with high efficiency and low cost by "going G-W" in your infra-red processing operations.

GIFFORD-WOOD CO.
420 LEXINGTON AVENUE • NEW YORK 17
565 W. WASHINGTON STREET • CHICAGO 6
Factory — Hudson, N. Y.

G-W HANDLES IT...
faster • easier • cheaper

GIFFORD-WOOD
SINCE 1814

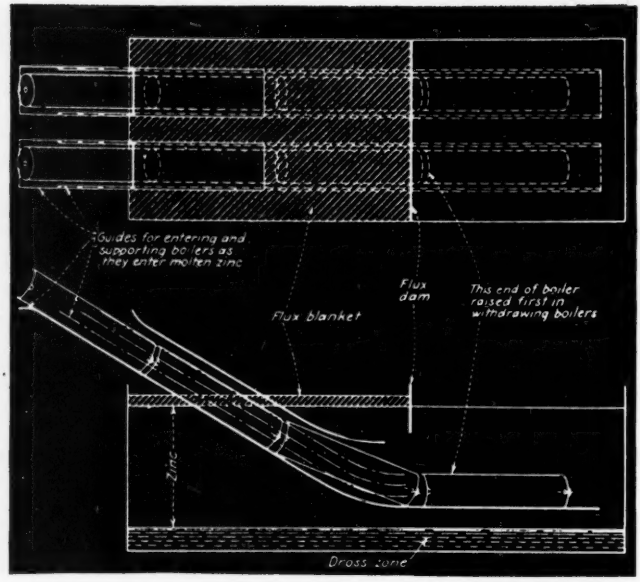

Guides for entering and supporting boilers as they enter molten zinc
Flux blanket
Flux dam
This end of boiler raised first in withdrawing boilers
Zinc
Dross zone

Fig. 4 — Diagram showing a chute arrangement for galvanizing cylindrical shaped tanks (Drawing courtesy "The Iron Age")

to galvanize cylindrical shaped tanks. The fact was brought out that the latest development in galvanizing tanks is to process them on a conveyor which carries the work through all of the steps in the cycle and thereby eliminates handling except at the loading and unloading stations. It appears that where production warrants it, the consideration of automatic types of conveyorization for hot zinc galvanizing operations on tanks and other types of articles now processed by hand operations is justified.

* * *

Proper Surface Preparation Important for Porcelain Enameling

ALL evidence points to the fact that renewed emphasis is being placed on better cleaning and pickling operations with good technical control for the surface preparation of steel prior to porcelain enameling. Modern equipment and methods, including the first continuous automatic pickling machine used in a porcelain enameling plant in Canada, have been incorporated in the enamel plant of Frigidaire Products of Canada, Limited, Leaside, Ontario.

According to a description of the overall enameling process used in this plant as given by D. S. O'Donnell in the June 1947 issue of "Canadian Chemistry and Process Industries," the continuous automatic pickling machine consists of 10 tanks for cleaning the ware of grease and organic materials, removing rust, etching, nickel flashing, rinsing at appropriate points, and neutralizing the acids on the ware, as well as a drier. The pickling machine loops in two parallel lines, with six tanks located on one side and four tanks and the drier on the other. The machine has 46 arms which move vertically and horizontally. Parts to be pickled are hung on special hanging tools made of Monel metal. Monel hangers have been found to have a long life in the pickling operation.

Ware, hung on the Monel tooling, is placed on the arm of the pickling machine. The arm is first moved up vertically and then horizontally and dropped down into the first tank. The arm is moved along in the solution of the tank as other arms are being loaded

PORTRAIT OF A SPEED-WET DISC "TAKING IT"

...and coming back for 12 TIMES / MORE!

THERE'S AN INTERESTING LESSON in production economy back of this picture. The camera has accurately "caught" the flexural distortion of the grinding disc, as it "hugs" the work contour. But the story behind the picture is even more striking. Speed-Wet Metalite Fibre Discs, like the one in the picture, are averaging 12 castings per disc as against *one* for their nearest competitor—and at no greater cost.

Technically, the answer to this extra flexural strength and cutting life of Speed-Wet Discs is in their all-fibre backing and resin bonding. The all-fibre backing withstands flexing like a steel spring. The heat-set resin bonding resists cutting heat and retards grit-shedding and glazing.

As a proving ground for grinding disc performance, this severe application demonstrates true product merit and the assurance of "value received." It is thus more than likely that a job test of Speed-Wet Discs in your own plant will improve your production too. We'll be glad to arrange it at your convenience—just return the coupon.

TO: BEHR-MANNING, Troy, N. Y.
Please arrange to job-test your new Speed-Wet Discs at our plant.

Firm Name .....

Address .....

City..... Zone..... State.....

By ..... Title.....

Announcing
OUR NEW
SERVICE PACKAGING
JANUARY 1ST

BEHR-MANNING
(DIVISION OF NORTON COMPANY)
TROY, N. Y.

and moved forward. As it comes to the end of the tank, the arm is moved up and forward and lowered into the following tank. The time which ware remains in the various pretreatment tanks of the pickle machine can be varied with automatic control equipment. When the arm reaches the end of the first line, it loops around and comes up the other, from tank to tank, in the same manner. On leaving the last tank, it is raised to the uppermost position and moved horizontally through the forced air drier. Unloading is performed at the same end as the loading. It is reported that the machine will turn out 110 refrigerator liners an hour under the existing operating conditions.

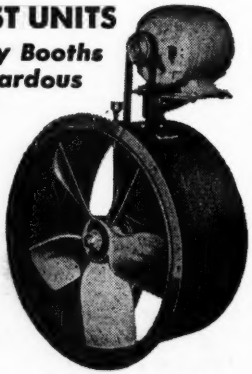
Considerable thought was put into the design and construction of the hangers used in the machine. Each one was designed especially for the part it carries. Box-shaped parts, for example, are carried such that they fill completely when entering the tanks and drain properly when leaving them. This arrangement was accomplished by the proper use of floats and weights.

Alkali compounds are used at boiling temperatures to remove drawing compounds, grease, and organic substances from the ware. Iron rust and iron scale are removed with sulfuric acid solutions at about 140 deg. F. A minute film of nickel is deposited on the ware from the nickel sulfate solution which was reported to be carefully controlled from the standpoint of hydrogen-ion concentration, and the treated ware is prevented from acid rusting in the drier by killing the adhering acid film with an alkaline sodium cyanide neutralized. All tanks in the pretreatment cycle are carefully controlled with regard to temperature and concentration of chemicals used. When taken off the pickling machine, parts are hung on the ground coat conveyor line which is easily accessible.

In a discussion of the essential principles of preparing steel surfaces for porcelain enameling in a recent issue of "Steel" (July 21, 1947), Dr. G. H. McIntyre, Ferro Enamel Corporation, Cleveland, points out the importance of a good nickel flash in lowering rejects and ensuring generally good enameling qualities of all types of steel. According to Dr. McIntyre, a proper nickel deposit in the pretreatment operation improves the bonding range of the ground coat, and minimizes copper beading and fish scaling by reducing overactive oxidation characteristics of the steel. The enamel is bonded to the steel through absorption of a uniform adhering oxide layer into the enamel layer. The nickel flash regulates the quality of this oxide layer.

It was pointed out by Dr. McIntyre that most authors, researchers, and shop operators agree that the temperature of the nickel dip, concentration of nickel salts, and pH of the solution

EXHAUST UNITS
for Spray Booths and Hazardous Locations



Fan Sizes 12" to 42"

Free Delivery C. F. M. 900 to 29200

Immediate Deliveries from Stock.

Also Manufacturers of a complete line of waterwash and dry type paint spray booths with accessories. *Send for details.*

M. & E. Manufacturing Co.
2571 Winthrop Ave.
Indianapolis • Indiana

YOU CAN GET A LACQUER TO RESIST

WATER...

BUT WILL IT BE RUINED BY SWEAT!

Unichrome Coatings offer you the Right Combination of properties for your product . . . every time!

Air-drying lacquers seldom resist exposure and perspiration equally well. But often, that's just the combination you need for decorative hardware. The *right combination* also includes hardness, high gloss, extra adherence. Unichrome Coating A-112 supplies them all.

In fact, one lock manufacturer not only greatly improved his product with A-112's combination of properties, but actually saved production time. Its exceptional adherence eliminated his need for cleaning brass after buffing.

Whatever you make, chances are there's a Unichrome Coating that's *exactly right* for your product—for service requirements, for eye-appeal. It will pay you to look it up. Write us today on the properties you need in a coating, and we'll send you full information. No obligation, of course.

UNICHROME SYNTHETIC COATINGS AND LACQUERS

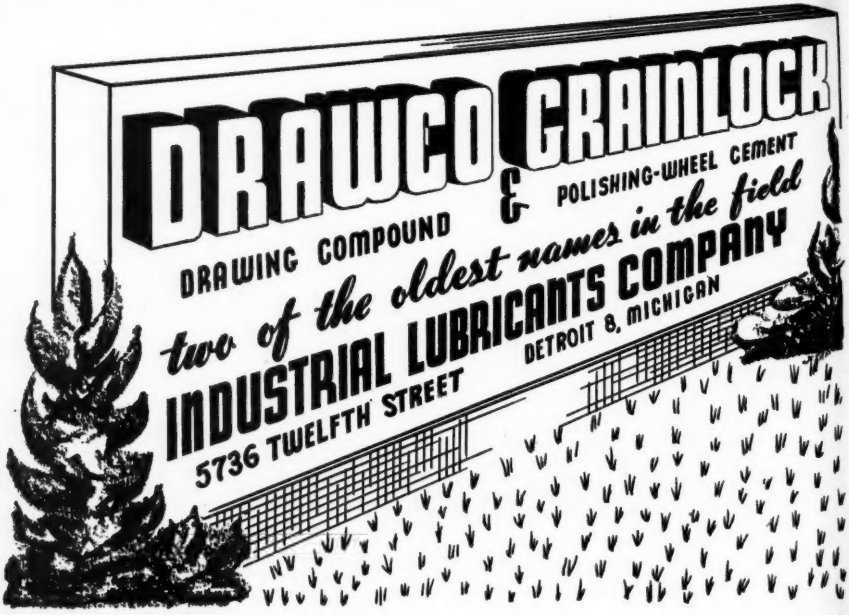
Products of UNITED CHROMIUM, INCORPORATED

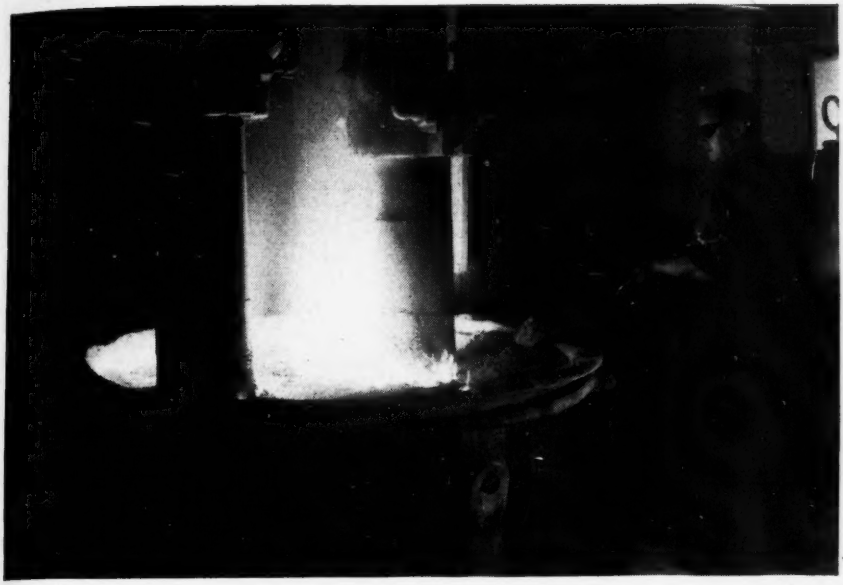
51 E. 42nd St., New York 17, N.Y.

Detroit 7, Mich. • Waterbury 90, Conn. • Chicago 4, Ill. • Dayton 2, Ohio • Los Angeles 11, Cal.

are of prime importance in the enamel pretreatment cycle and must be controlled within rather narrow limits for best overall results. In addition, such factors as time of immersion, sequence and methods of rinsing before and after the nickel flash, interval of exposure to air between each step in the process, thickness of nickel coating, type of steel surface being treated, and proper removal of sludge have important bearings on the quality of the resultant coating. It is generally agreed that with single nickel salts, a concentration of from ½ to 3 oz./gal., a pH of 5.4 to 6.2, a temperature of 150 to 180 deg. F. and a time cycle of 4 to 6 minutes should be maintained, at least for ground coat application. The important point that was stressed by Dr. McIntyre was that when a set of conditions for the nickel flash sequence are once determined for satisfactory performance in any given shop under normal operation, those conditions should always be maintained to a point that is within a practical narrow limit of variation.

According to Dr. McIntyre a heretofore little stressed but important variable in the pretreatment process is the kind and amount of iron deposited on the ware during the nickel flash and the degree of oxidation on exposure to the air. It is these salts which have a great bearing on the quality of white applied directly to the iron and undoubtedly have considerable influence on the quality of the blue ground coat over a nickel flashed surface. To avoid the objectional effect from iron salts, the following procedure was recommended based on large scale production procedures, as well as laboratory research; (1) after the acid pickle use a 5-minute rinse in sulfuric acid of pH at least 3, at room temperature; (2) use nickel dip preferably containing 1 oz./gal. single nickel salts, maintained at pH 3.5, and heated to tem-


DRAWCO & GRAINLOCK
DRAWING COMPOUND & POLISHING-WHEEL CEMENT
two of the oldest names in the field
INDUSTRIAL LUBRICANTS COMPANY
5736 TWELFTH STREET DETROIT 8, MICHIGAN



Where EXOLON *Quality* Begins

EXOLON — aluminum oxide abrasive grain — is produced by melting bauxite at extremely high temperatures in an arc-type electric furnace (as illustrated above).

Through careful control of this and other processing methods, the Exolon Company produces aluminum oxide abrasives designed for the finest metal-finishing work. "Exolon RST" is one of them — an accurately graded, ceramically coated grain with a slightly roughened surface, for best results with hot glue set-up polishing wheels.

Write for Exolon's folder on polishing procedures for different types of material.

Photomicrograph of Exolon RST Polishing Grains

THE EXOLON COMPANY

943 E. Niagara St. Tonawanda, N. Y.

Manufacturers of SILICON CARBIDE and ALUMINUM OXIDE ABRASIVES

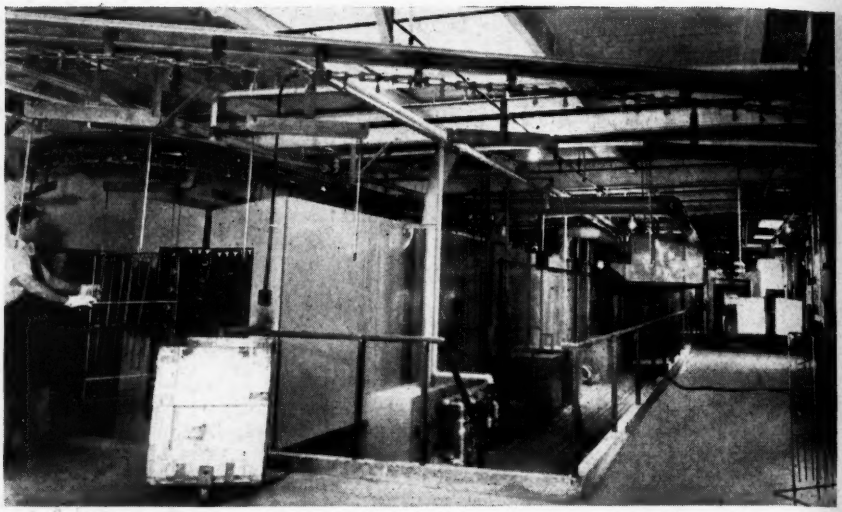


Fig. 5—Continuous spray cleaning and pickling unit for porcelain enameling. Work enters the unit at the right (background) and leaves the unit at the left. Note carrier for holding stove door panels during processing.
(Photo courtesy "The Enamelist")

perature of 155 to 160 deg. F. The ware should be left in this solution for a sufficient period to deposit 0.04 to 0.08 gram of metallic nickel per square foot of metal surface; (3) it is preferable not to use a rinse after the nickel dip, but two cyanide neutralizer tanks should be available. The first one is made up in fairly strong solution and the second one weaker. The recommended composition for the first cyanide neutralizer is 0.4 oz./gal. of sodium cyanide and 0.2 oz./gal. sodium hydroxide using a temperature of 140 deg. F. with an immersion time of 1½ minutes; for the second cyanide neutralizer a solution containing 0.12 oz./gal. sodium cyanide and 0.10 oz./gal. sodium hydroxide is recommended using the same temperature as above with an immersion time of 2½ minutes. For further, more complete details on this timely discussion of surface preparation of steel prior to porcelain enameling, reference should be made to the excellent article by Dr. McIntyre, appearing in the July 21, 1947 issue of "Steel."

According to information presented by Wm. M. Clarke of the Metalwash Machinery Company, Irvington, N. J., in a recent issue of "The Enamelist" (see also "American Machinist," January 1947), continuous spray type equipment is being successfully used for the cleaning and pickling of metal parts prior to porcelain enameling. A machine of this type has been in operation at Landers, Frary and Clark, New Britain, Conn., since March 1946. The machine consists of a tunnel arranged in the form of a "J" with the various solution tanks, pumps, and motors being arranged beneath the tunnel, and an overhead monorail conveyor for moving the work through the various stages. Figure 5 provides a view of the continuous spray cleaning and pickling unit. The conveyor chain is of ordinary steel construction. Monel hangers extend through a slot in the roof and are equipped with a

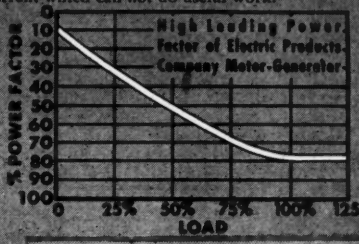
ELECTROPLATING FUNDAMENTALS— how power factor affects plating cost

Study the mug of beer. It's a picture of Power Factor.

The foam is magnetizing current. *The beer* is alternating current which can do useful work. Most plating shops are forced to use *both* kinds of current. You have to buy the *foam* to get the *beer*. Power factor is the ratio of the beer to the total; high Power Factor means less expenditure for current which can not do useful work.

In many shops, the high leading power factor of the E.P. synchronous motor has vastly improved overall shop power factor. The result is lower power bills, plus improvement in overall shop equipment efficiency . . . all at no extra cost.

Consider Power Factor when you select your generating equipment. You'll find the motor-generator does the job better.

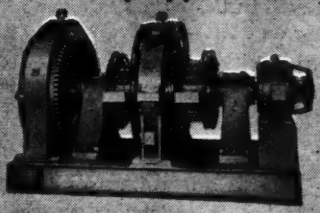


why EP motor-generators are best . . . for every application

Electric Products motor-generators, designed specifically for electrolytic processes, provide more value for less overall cost.

- *Less current consumption*—ratings 2500 amps. and above have a minimum guaranteed lifetime efficiency of 75%.
- *More amperes per dollar*—because of their reserve capacity, E.P. motor-generators safely handle heavy overloads.
- *Minimum plating cost*—inherent constant-voltage output assures the same rate of deposit at all times.
- *No special protective equipment*—expensive forced-draft ventilating is not required with E.P. motor-generators.

When selecting generating equipment for any electrolytic job, specify E.P. motor-generators. They give economies of operation unmatched by any other source of direct current.



Every part of an E.P. Motor-Generator is readily reached for inspection and maintenance particularly important with relation to the bottom brushes. E.P. equipment requires no special protective equipment. Thirty-four years of operating experience prove that these Motor-Generators function safely under the extreme conditions common to most electrolytic operations.

WRITE FOR BULLETIN 202.
It describes the entire line of E. P. Motor-Generators for the Electrolytic Processes.

EP X-34

THE ELECTRIC PRODUCTS COMPANY
1741 CLARKSTONE ROAD CLEVELAND 12, OHIO

hook on which individual parts may be hung from one or more hooks in order to obtain a suitable arrangement of the parts and to secure maximum production capacity. The ware, which consists of the component parts of ranges and washing machines that are to be porcelain enameled, is subjected to the mechanical and chemical action of jets of sprays impinging upon the work from all angles. For any given setting of the machine, it is reported that the cleaning, etching, and nickel sulfating of each piece is absolutely uniform and beyond the discretion of the operator.

It is reported that the use of the continuous processing equipment for surface preparation has resulted in the practical elimination of rejects from improper cleaning or pickling. Shown in Fig. 6 are enameled parts in the firing and inspection department. Although there are quite a number of hot alkaline and acid solutions being sprayed in this machine, it is reported that the exterior surroundings are entirely free from fumes, steam, or odors, which are taken care of by two ventilating systems—one system for the acid solutions and the other for akla-line solutions.

* * *

Determination of Adhesion of Plated Coatings on Aluminum

THE desirability of having a method for measuring the adhesion of plated coatings on aluminum is recognized by most electroplaters working with aluminum. Aluminum can be finished similar to other metals by electroplating with nickel, chromium, brass, zinc, copper, or silver. Also, some plated coatings have special properties. Silver plating reduces electrical resistance at joints and contacts and is also sometimes desirable because of its low resistance to high frequency currents. Copper plating permits joining of parts with soft solder. Brass plating permits direct rubber bonding; sometimes, aluminum is chromium plated for resistance to

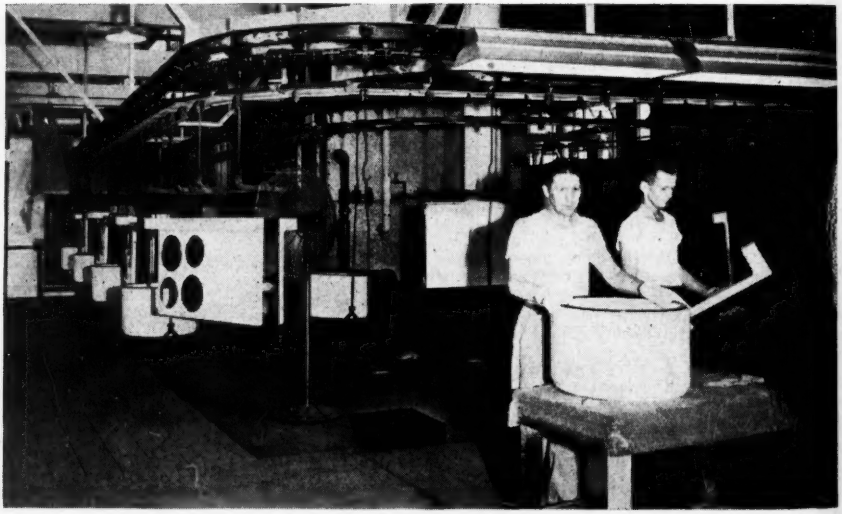
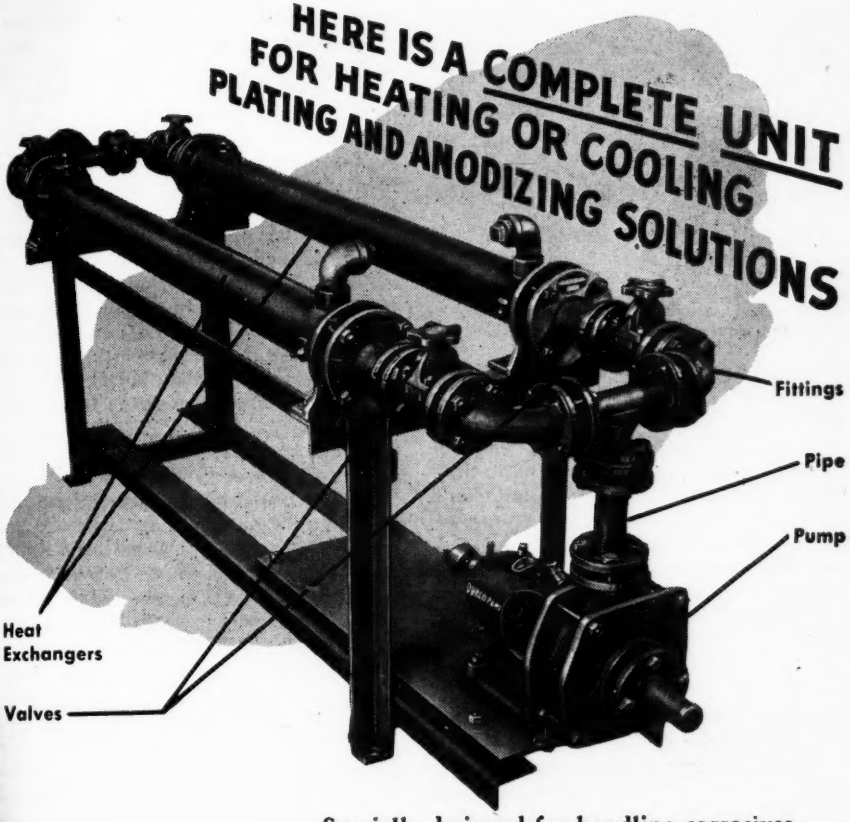


Fig. 6—Porcelain enameled parts in the firing and inspection department

HERE IS A COMPLETE UNIT FOR HEATING OR COOLING PLATING AND ANODIZING SOLUTIONS



Specially designed for handling corrosives, this standard unit consists of two heat exchangers with the necessary valves, pipe, fittings and pump — all made of the well-known alloy, Duriron.

Duriron is a high-silicon iron with extreme resistance to corrosion from bright nickel and chrome plating solutions, anodizing solutions and many other corrosives.

Similar units are available with one to nine or more heat exchangers in banks, supported by one frame.

Prints showing typical layouts will be sent on request. Ask for Folder T.

DURCO
CORROSION RESISTING ALLOYS & EQUIPMENT

THE DURIRON CO., INC. DAYTON, OHIO

Branch Offices in Principal Cities

DURCO Adv. 49-GM

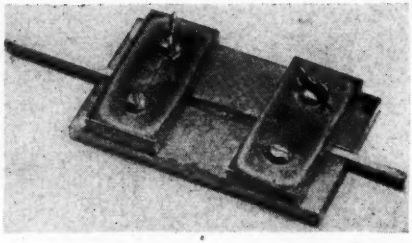


Fig. 7—Metal jig for holding adhesion test specimens in alignment during soldering and subsequent cooling
(Photo courtesy "The Monthly Review")

wear or alkalis, or is zinc plated so as to prevent the seizing of threaded parts.

For many applications of electroplated coatings on aluminum it may be desirable to measure the adhesion of the coating to ensure optimum performance under service conditions. Described in the April 1947 issue of "The Monthly Review" is a method for measuring the adhesion of plated coatings on aluminum developed by R. A. Ehrhardt of the Bell Telephone Laboratories and J. M. Guthrie of the Fidelity Chemical Products Company, which employs a soldering test.

The soldering test is based on the use of a 1 x 4 x $\frac{1}{16}$-inch specimen which is milled on the long 4-inch edge, that becomes the soldered edge of the final test specimens. This is done in order to obtain a flat surface. The prepared specimen is then processed and plated. The Zincate immersion pretreatment was used prior to copper plating. Following plating, the test specimen is cut into $\frac{1}{8}$ x 1-inch strips, perpendicular to the long edge. Following the recommended procedure described by Ehrhardt and Guthrie, the deposit is then removed from the two long faces of the strip with fine emery paper, leaving a $\frac{1}{16}$ x $\frac{1}{8}$-inch plated area on the ends. One of the ends is then tinned with a 50:50 lead-tin solder and the strip soldered to the end of a similar copper strip which has been tinned on the end only, the sides of the copper piece having been chromium plated. Figure 7 shows a metal jig which is designed for holding the pieces in alignment during soldering and subsequent cooling.

The soldered assemblies are mounted in a pair of jaws having swivel connectors. Figure 8 shows the soldered joint adjusted in the test clamp and also the jig used to eliminate strains during clamping. The resulting assembly is tested in a Schopper tensile test machine with a capacity of 70 pounds. After the joints had been broken, it was reported that the aluminum piece was tested to see if it would resolder in order to determine if the joint had failed in the solder or in the bond between the copper and the aluminum. Data showed that joints between copper specimens of the same size broke at 70 pounds or 9,000 pounds per square inch.

Finishing engineers who are presently engaged in the production of electroplated aluminum that must subsequently withstand various soldering assembly operations or that is to be used as a decorative base should be interested in this adhesion test in order to assure optimum performance of the plated parts when they are finally placed in service.

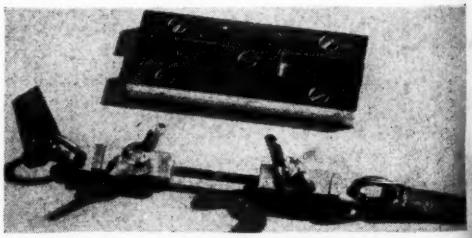


Fig. 8—Soldered joint adjusted in the test clamp. Also shown is jig used to eliminate strains during clamping.
(Photo courtesy "The Monthly Review")

Improved Plating-

WITH SARCO

Controlled temperatures mean uniform, high quality plating, day in and out. Yon can control wash tank temperatures with the Sarco "87" at a cost of a few dollars. Most plating tanks can be controlled with the Sarco "LSI" electric control which costs much less than most methods. For special and highly accurate controls for vapor-line and heating and cooling there are a dozen different Sarco combinations. Four types of Sarco Steam Traps help reduce fuel costs.

SARCO CATALOGS

No. 1025
LSI Electric Control

No. 700
TR-40 Cooling Control

No. 650
Vapor-Line Control

No. 600
Tank Temperature Controls

No. 550
87 Trap-Control

Nos. 350 & 450
Bucket, Thermostatic and Float-Thermostatic Steam Traps

No. 1200
Pipe Line Strainers

ASK FOR THE SARCO CATALOGS ON PLATING

219

SARCO SAVES STEAM

SARCO COMPANY, INC.
Represented in Principal Cities
Empire State Building, New York 1, N. Y.
SARCO CANADA, LTD., TORONTO 5, ONTARIO

Barrel Finishing of Metal Products

Part 15—A Discussion Concerning Barrel Loads and Barrel Speeds

By H. LEROY BEAVER
Barrel Finishing Consultant
Lansdale, Pennsylvania

OUR recent ten-day trip, all of which was spent in barrel finishing surveys, prompts the discussion relative to burnishing barrel loads and loadings and as well barrel speeds. It had been our impression that at least in sections of the country where barrel finishing had been practiced for the greater number of years that we would find a considerably enlightened understanding of the principles involved and also find those things we had learned down through the years exemplified in the practice of barrel finishing.

Not so, however, for in most cases barrel finishing seems to go along in much the same manner and with about the same degree of understanding as was general in the period say from about 1906 to about 1910 or in the period when barrel finishing procedure, as such, might be considered to have gotten little further than to be wrapped in its swaddling clothes. Therefore, let us together examine into these early years a bit to learn something of the earlier conceptions of the practice of the art.

If we should, for example, nominate Edmunds in England as literally the grandfather of barrel finishing we feel we would not be far from correct, for we do know that barrels originated by him were used in England prior to 1903, since the first of his barrels were brought to this country in that year. Following this, the Barton brothers in Providence originated their so-called tubbing machine early in 1904, and following this Joseph Baird developed the barrel carried within a yoke and that is substantially the Baird barrel of this day—either late in 1907 or early 1908. Following this, the Abbott barrel was originated and first placed on the market by George E. Abbott in 1910. Among these four then we have what we might term the master models of all barrel designs since introduced on the American market.

While there were a great many misconceptions as to what might be possible of accomplishment in these early barrels, it might be interesting to examine backward a bit into the bibliography of those days to see what the general trend of understanding seemed to be and we are happy to be able to give you a few citations from "Brass World" (now merged with "Metal Finishing") October 1906: "Operate

Beautiful, like polished ebony,
these zinc door handles were processed in Enthone EBONOL-Z. This simple, one-dip method imparts to zinc base diecastings and zinc plated parts a rich, adherent black with good weathering qualities.
Parts need only be cleaned and then treated for a few minutes in a warm solution of EBONOL-Z. Material cost is one-half cent per square foot of area coated—
CHEAPER THAN PLATING OR PAINTING.
Now used for finishing typewriters, business machines, toys, cameras, radios, buttons, buckles, name plates, etc. Samples processed in our laboratory and detailed procedure supplied.
Other Ebonol Processes
Ebonol-S for Steel and Ebonol-C for Copper and Brass.

the barrel at 50 r.p.m. Although the polishing action will take place if only a few balls are used, it is false economy to use too small a number. It matters not what the shape of the barrel is, although a hexagon barrel is better suited to stir up the work."

We have no doubt but that in that period many, if not most, barrels were operated at or close to the above mentioned speed. Today, if we visited a factory where barrels, whether high and narrow or long and narrow as we have always termed them, were operated at 50 r.p.m., our very next point for examination in the survey would be the factory scrap heap in an effort to determine just how much of the materials are there as the result of excessive barrel speeds, since excessive barrel speeds are the most prolific cause of distortion damage and irreparable ruin of all too many parts as they proceed through the various steps in the course of manufacture.

With respect to the speeds at which a given barrel should be operated, we still maintain that it is all wrong for any barrel manufacturer to specify in his literature a fixed table of speeds for the various sizes of barrels, and in this connection it might be well to repeat the following rule in mechanics that govern barrel speeds: "A true sphere offers the least resistance, an irregular shaped burnishing piece offers substantially more resistance, hence its greater efficiency in barrel finishing." And that is as respects the forms of the burnishing materials.

Now as to parts to be processed: "As between perfect spheres and irregularly shaped articles we have, on account of the symmetry of the sphere, a very different system of the combination of forces and impulses from what we would have acting in the case of more irregularly shaped articles. As the articles range away from the basis of the true sphere toward irregular

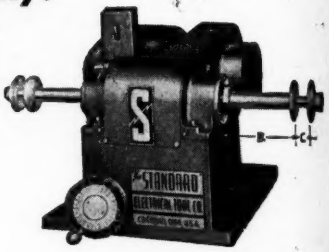
BUFFING AND POLISHING MACHINES

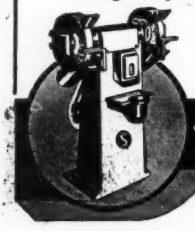
1500 to 3000 r.p.m., Instantly!

The Standard Infinitely Variable Speed Buffer and Polisher with its *Speedial* Control gives you any spindle speed from 1500 to 3000 r.p.m. instantly.

8 MODELS FROM 1 H.P. to 15 H.P.

- Maintains peripheral speed throughout wheel life.
- Gives you maximum usable wheel life.
- Lower production costs.
- Higher production.

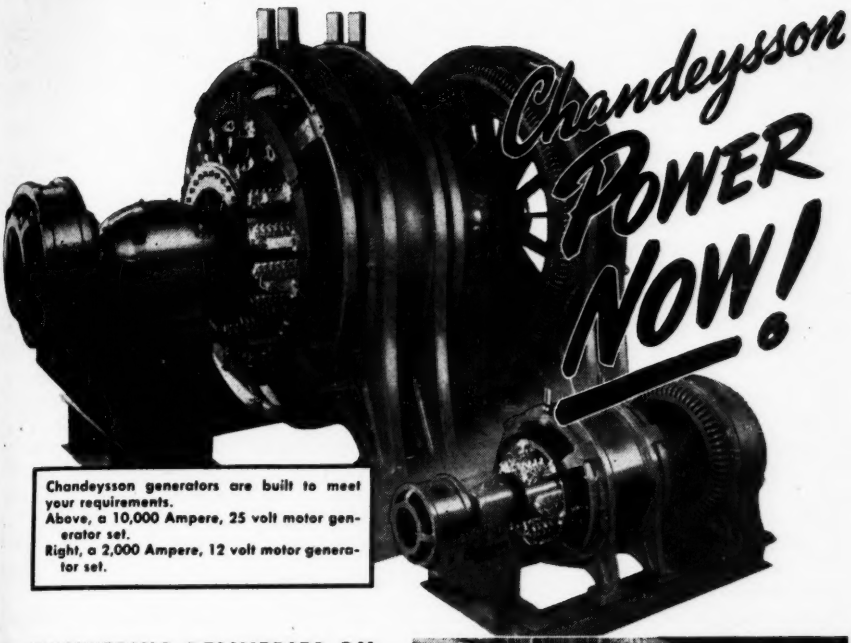




Type IBVB 1 H.P. Bench Model.
Also available with taper spindles.

The STANDARD ELECTRICAL TOOL Co.
CINCINNATI · 4 · OHIO
2518 RIVER ROAD

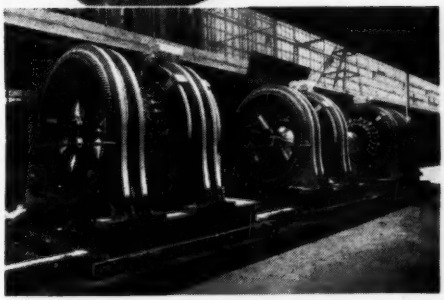
WRITE FOR BULLETIN B2.



Chandeysson generators are built to meet your requirements.
Above, a 10,000 Ampere, 25 volt motor generator set.
Right, a 2,000 Ampere, 12 volt motor generator set.

NANKERVIS DELIVERIES ON CHANDEYSSON GENERATORS AT PRE-WAR LEVEL

Chandeysson generators, used in all types of industry for over 42 years, are available NOW through the Nankervis Company. Due to the greatly increased production facilities of Chandeysson Electric Company, Chandeysson generators in all sizes can now be delivered to you promptly. A Nankervis engineer will call upon your request.



45,000 AMPERES ON THIS FLAT CAR
Three 15,000 ampere, 12 volt generators are shipped to a manufacturer who has standardized on Chandeysson for over 20 years.

GEORGE L. Nankervis COMPANY

5442 SECOND BOULEVARD, DETROIT 2, MICHIGAN

COMPLETE METAL FINISHING EQUIPMENT

shapes, an adjustment or control of the speed of the barrel must be exercised commensurate with the remoteness of the article from the true sphere. In other words, the more irregular the article the more need for control or adjustment of the speed of the barrel."

As an example of the above rule, we might refer to what is known as a radial bearing wherein we have an inner and outer raceway, a ball retainer, which is generally a form of steel stamping, and, of course, the necessary complement of steel balls which are as nearly as possible true spheres within the meaning of the rule in mechanics governing barrel finishing procedure. In the production of the steel balls, various barreling operations are performed, and barrel speeds of up to 40 r.p.m. may safely be used due to the symmetry of the ball. In the barrel finishing of the stamped steel cages or retainers, barrel speeds of 40 r.p.m. would simply mean that the degree of permanent deformation would be such as to render the retainers useless.

A barrel operator may have a wide variety of shapes to burnish and it is safest for him to regulate the speed of his barrels, in order to avoid continual change of barrel speeds, to that speed at which his most difficult articles are best operated upon. This will generally be a comparatively low speed which will not dislodge the articles from the burnishing mass. This speed would be the one adopted for the more difficult pieces having a size and shape requiring a lower speed than the others. Other articles in his group could be burnished at a higher speed, but the comparatively lower speed having been adopted for the more difficult articles will be equally effective in the barrel finishing of his complete group of articles.

We believe that any barrel operator who studies this rule even casually will be able to sense just why many of his barreling operations have been something other than a qualified success, and why we feel so strongly against the recommendation of fixed speeds by any barrel manufacturer whoever he might be or wherever he may be.

To those of us who are in almost daily contact with barrel finishing procedure and its attendant problems, it would not be at all unusual to have a dialog somewhat like this: "Now that I am here, what is your trouble?

"Well, we rigged up this barrel with the proper pulley set up to give the specified barrel speed, put in the load of balls and parts, water and soap and ran the barrel for an hour. When we emptied it we found that we had literally beat the living daylights out of the parts, so we threw them out on the scrap heap, and we have the suspicion that barrel finishing is not for us."

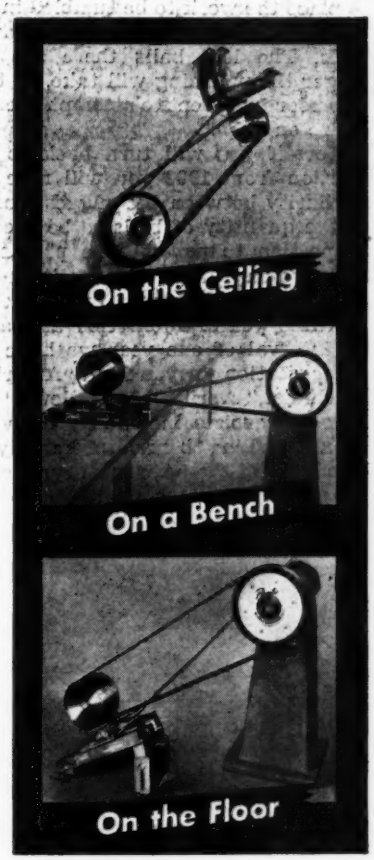
The above would be indicative of

Get.. FLAWLESS FINISHING RESULTS
PREPARE THE SURFACE
with
Crystal
TACK RAG
TACK OFF THOSE SPECKS
Speed Up Your FINISHING PRODUCTION LINE with this Soft Tacky Cloth
BCP
TACKY WIPERS
Available in GROSS LOTS thru PAINT DEALERS or from the Processor
Industrial Size 18 x 36
Spontaneous Combustion Proof
Exclusively Processed by
BAUGHN CHEMICAL PRODUCTS CO.
7027 North Ravenswood Ave., Chicago 26, U. S. A.

1 Base Angle Adjustment
2 Leaf Spring Belt Tension
3 Belt Tension Adjustment
4 Convenient Belt Tracking Adjuster
On the Wall

Presto Universal Back Stand Idlers for Limited Installation Space

Just what Polishers have long needed. Operate in locations where use of ordinary idlers is impossible. Convert polishing lathes into abrasive belt polishing machines without additional space —without moving lathes.



OPERATE IN ANY POSITION

Mount Presto Universal Back Stand Idlers on the Ceiling, on the Wall, on the Floor or on a Bench, to equip lathes for abrasive belt polishing with minimum space and expense. They operate perfectly in any position.

Only Presto Universal Back Stand Idlers have all these important features:

Rugged Construction for long dependable service.
12" Belt Tension Adjustment—crank operated.
Leaf Spring Tension to keep belts tight.
Easy change to Right or Left hand operation—changing four bolts does the trick.
Adjustment for Belt Tracking at operators position.
Sealed Ball Bearings packed in grease.
Perfectly Balanced Pulley—10" dia. x 6½" face.

Many other features. Ask your Jobber or write for literature.

The **MANDERSCHEID** *Co.*
810 Fulton Street, Chicago 7, Illinois

Serving the Metal Finishing Trade over 35 Years.

precisely what happens when arbitrary barrel speeds are recommended without exact knowledge of the size and shape of the parts to be processed. This same dialog, to be sure, is repeated time after time and with only slight variations and always for the one cause; namely, excessive barrel speed.

Following the first citation in this discussion we now move on down the years a total of three and again we quote from "Brass World," March 1909 as follows: "In using steel balls for burnishing, all that is necessary to do is to have a suitable tumbling barrel (a horizontal one is required) and to place the work to be tumbled in the barrel with a sufficient number of balls. The less balls there are the longer the polishing will take, so that it is poor judgment to attempt to economize on balls."

Now if you will turn back to the citation from 1906 you will note the similarity between the suggestions as to the quantity of balls to be used in proportion to parts to be processed, and also that little advance in understanding had developed in this period of three years. From this and after an interval of one year we have another citation for you from "American Machinist," April 1910 as follows: "The process consists in placing the work in a tumbling barrel, preferably of wood and of the horizontal type, so as to prevent scratching of the work against the sides of the barrel, and them **dumping** into the barrel a large quantity of steel balls measuring in bulk about twice that of the work to be burnished together with a soap mixture in which the work and balls are confined or held together so that as the barrel rotates, the whole mass of soap work and balls is tumbled about, causing the balls to be forced in all directions across all of the work surfaces, thus giving a constant burnishing action. The process takes the place of buffing both before and after plating on such articles as electrical goods, chains, buttons, thimbles, typewriter parts and other parts.

"Naturally, when we consider using, say a couple of pecks of balls for the burnishing of thimbles or other small parts a peck at a time, the question of expense will come to mind instantly and lead us to wonder how the process can be an economical one even though the balls are used over and over again."

If you will note these quotations from what we may appropriately term the "early" days of barrel finishing procedure, you will see that in every case the conception of the operation was to literally stir up the work and this could only be done by barrel speeds of anywhere from 35 to 60 r.p.m., both of which when applied first to high and narrow barrels and secondly to long and narrow barrels would be far too high speeds for our present understanding of the carrying

WOOD TANKS for
Plating and Pickling

Excellent Service on all types of wood tanks for any purpose. Built to your specifications by one of America's oldest tank specialists.

Ask for estimates and suggestions.

KALAMAZOO TANK & SILO CO. • **Kalamazoo 16, Mich.**

THE INVISIBLE TOOL...

● Clean Air . . . You can't see it . . . but there's no denying its importance. Increased efficiency, greater production, fewer rejects . . . reduced absenteeism . . . all contribute to more profitable operation of any plant.

A Kirk & Blum System works wonders where a fume condition exists . . . clearing the contaminated, murky atmosphere and brightening not only your plant but your profit picture as well.

KIRK & BLUM Engineers will be glad to show you how a K & B System can improve your production . . . actually pay for itself over a period of time. The Kirk & Blum Mfg. Co., 2816 Spring Grove Ave., Cincinnati 25, Ohio.

Removing fumes from soldering and brazing operations of The Lunkenheimer Company, famous valve manufacturers.

WRITE FOR ANY OF THESE BOOKS TODAY:
"Dust Collecting Systems for Metal Industries"
"Blower Systems for Woodworking Plants"
"Fan Systems for Various Industries"

KIRK AND BLUM
FUME CONTROL

out of the barrel finishing process.

Also, in the citation from "American Machinist" we find the first mention in the entire bibliography of barrel finishing of the rule to use two parts of burnishing materials to one part of the parts to be burnished, which quite obviously is a rule that could only be applied in a small minority of applications. True, on small parts which at least to some extent would act against each other and in this way act as self-burnishers, the rule would hold, but as to irregular shaped parts of comparatively larger size, the rule would likely spell disaster if strictly adhered to. Thus, instead of such a hard and fast rule, it would be better for all barrel operators to give consideration to the mechanics of the operation as respects proportions of burnishing materials to work and which reads as follows: "Inasmuch as no hard and fast rule can be laid down regarding the proportion of burnishing mass to parts to be burnished, the best specification would be that the quantity of burnishing mass should always be such as to completely envelop the articles being burnished during rotation, and this undoubtedly is the most satisfactory rule to follow in carrying out the process."

Lifting a phrase directly from the context of this rule, viz., "the quantity of burnishing mass should always be such as to completely envelop the articles being burnished," leads us to another phase of this discussion which relates to loads found in barrels actually operating in production lines. The rule most often followed as respects loadings is that when the operation is performed in a bare barrel and for the purpose of surface removal or burring, the best practice is to load the barrel to only slightly more than one-half full, but that in bright burnishing where hardened materials and soap lubricant are used for producing the burnished finishes, the load may

But *Irons and Steels* Deserve JETAL BLACK

. . . the best protective and blackening finish available

JETAL is a tough, speedy "blackface" for your irons and steels. It is no thin skin of burnt cork illusion.

JETAL goes on fast, but it stays on. **JETAL** is better because it does more and costs less.

JETAL is a black oxide coating that is easily and inexpensively applied by immersion in less than 5 minutes.

JETAL is tough, long lasting and adaptable.

JETAL may be resistance or spot welded, and soldered.

JETAL will not chip, peel, crack, crumble or dust off, even on bending or cutting.

JETAL forms a fine base for lacquer, enamel or japan.

JETAL resists wear and penetration better than any black on the market.

JETAL is black **BLACK**, deep and solid.

JETAL does not change metals dimensionally after application.

JETAL costs less and can be applied by immersion in bulk, baskets or barrels.

BLACK ← OTHER ALROSE FINISHES → WHITE

Oxidine B — for blackening copper and brass.

Oxidine Z — for blackening zinc.

Bring your finishing problem to ALROSE for the best solution. Let ALROSE JETALIZE your sample product, or demonstrate the JETAL PROCESS in your plant.

Bon White — an immersion tin finish for copper, brass or aluminum — exceptionally bright white — ideal soldering base.

Wite Brass plates a tertiary alloy of copper, zinc and tin, giving brilliant, non-tarnishing, long-wearing surface over all base or precious metals.

ALROSE CHEMICAL COMPANY

Manufacturing and Research Chemists

PROVIDENCE, RHODE ISLAND • WILLIAMS 3000

run from the slightly more than one-half full to two-thirds full since in cutting down we depend somewhat on the sliding action of the parts across the face of the burnishing mass, whereas in bright finishing the dependence is more largely placed on pressures developed within the mass itself and where the maximum weights are applied both for work hardening the surface and, after plating, the closing of pores in the plated surface. However, the point we want especially to stress here is the loss of burnishing material in a progressive series of barrel finishing operations and the almost industry-wide matter of neglect in keeping burnishing material loads up to the proper level or quantity.

Every barrel operator knows, or should know, the maximum loading capacity of his barrels for best burnishing work results, and yet on this last series of surveys we did not find one single barrel but that was far short of its required and necessary load for obtaining the best results. This was not always due to inability to secure burnishing materials, for while this was true in two cases, in all of the rest there were burnishing materials on hand in the store room. Consequently, to just what should we charge the lack of materials in the finishing mass, to carelessness or just plain neglect? Suppose should you chance to occupy an executive capacity in a plant where barrel finishing is a part of your processes, why not ask the employee in charge of barreling operations just when he last checked the loads in the barrels, and don't be surprised if the answer runs all the way from never to anywhere from six months to a year.

We have always made it a point to insist, in plants where we act as consultant, that barrel loads be checked and corrected at least once in each three months' period. It is surprising how rapidly burnishing material loads may shrink. If this two to one rule is followed, it might work with a full load, but as materials are lost through spillage for the most part, and then not replaced, the load ratio quickly shrinks from two to one down to less than one to one or equal, but we never find that the proportion of parts per load is ever decreased in proportion to the decrease through loss of the burnishing materials. Thus, the quality of the finishes deterioriate, but instead of placing the blame for this on carelessness in barrel operation, the onus is always on either the barrel itself or the barrel maker, which is just a little less than fair. Remember that the best barrel finishes are derived from pressure of the forces developed within the burnishing mass while in motion and that as this pressure is decreased through the loss of burnishing materials the finish also deteriorates, and its best values are lost.

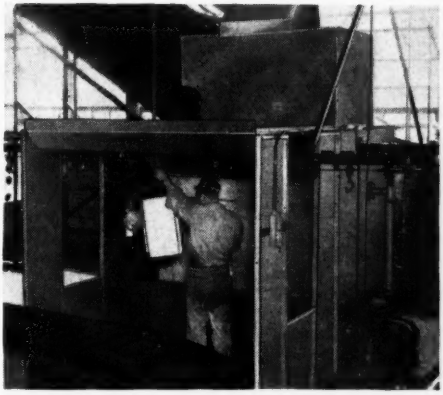
In the citation from "American Ma-

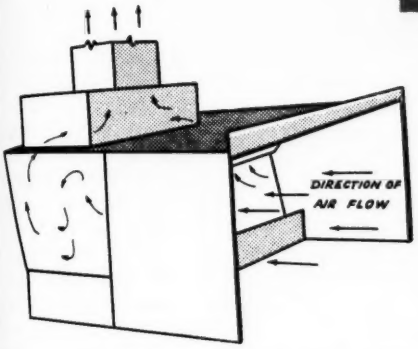
CUT DOWN REJECTS
WITH
ORVUS
IN YOUR METAL CLEANING BATHS
You'll find this synthetic detergent effective
—as a wetting agent
—as an emulsifier
—in dispersing lime soaps which might cause poor plating if allowed to deposit on the metal
—in helping to reduce pitting in subsequent plating baths.
Write for further information about Orvus to
PROCTER & GAMBLE, Cincinnati 2, Ohio

SPRAY BOOTHS
That Stay Clean!

- **EXHAUST CLEAN AIR**
- **GIVE FULL CONTROL OF PAINT OVER-SPRAY**
- **ELIMINATE FIRE HAZARD**

Here's How!





The over-spray air is actually washed — rubbed and scrubbed clean — by controlling the travel of both air and water.

This makes the DESIGN all-important!

And this is where ACME designing —KOCH engineering, fabrication and installation step in to provide Spray Booths that START clean and STAY clean for a cleaner, more efficient plant operation.

PHONE, WIRE or WRITE TODAY FOR COMPLETE DETAILS!

GEORGE KOCH SONS, Inc.

INDUSTRIAL EQUIPMENT

EVANSVILLE, INDIANA, U. S. A.

Sales offices in leading industrial centers:

NEW YORK
William Printz Co.
358 Fifth Ave.

★

CHICAGO
Koch Indust. Equip., Inc.
53 W. Jackson Blvd.

★

LOS ANGELES
Industrial Systems Co.
341 S. Central Ave.

chinist" back in 1910 the author wonders how, due to the high cost of burnishing balls, the process can be an economical one. In the not too distant past our principal burnishing materials manufacturers were forced by necessity to increase their prices, and in some quarters this caused literally a hue and cry, but in defense of those manufacturers we might ask whether you have bought any common ordinary iron carpet tacks lately? Well, we have, and the price was ten cents for a package marked as "Net Weight ⅛ Lb." In other words, 2 ounces for 10 cents or 80 cents per pound. Of course this was at retail and in small quantity, and even though the dealers might have been 50 per cent off list the price would still be 40 cents per pound. Now suppose that the price in bulk would be less 50-20 per cent, the bulk price would still be 32 per cent per pound. Iron tacks as we understand it are sheared and headed in one stroke of the producing equipment and that is the completed product.

Now suppose we examine just what happens in the making of a burnishing ball. Let us suppose that the tacks we mentioned above have a head ¼ inch in diameter and a shank ¼ inch long and that we compare them with a ¼-inch burnishing ball. The following are progressively the steps required in the production of a ball: (1) heading, (2) flashing, (3) sand tumbling, (4) hardening, (5) sand tumbling for scale removal, (6) lime tumbling for finish, and (7) leather buffing.

The current prices on first and second grade ¼-inch burnishing balls are 30 and 23 cents per pound respectively. Now with these figures before you, do those of you who have been complaining still feel that burnishing materials are too high in price? Frankly we know of no production tool which is precisely what a steel burnishing piece is in the last analysis that provides so much service for so low a cost, and should literally explode any argument from anyone that reason their barrels are underload is due to the high cost of the burnishing materials required.

In conclusion we wish to remind you that no barrel will produce its maximum of acceptable finished pieces when operated at extremely high speeds and with an underload of burnishing materials. Your best results are invariably obtained with a barrel loaded to its normal capacity and then operated at restrained speeds, so that the finishing action is developed from forces within the mass itself rather than by, as is indicated by the understanding that existed generally say from 1906 to 1910 and unfortunately still exists in some quarters, the rapid revolution of the barrel causing the parts to be tossed about in all directions and where the finishing result could not be by other than the action of impingement, which is always the least satisfactory way.

"PRODUCTION"

Type S Centerless

SURFACER
POLISHER
BUFFER

This versatile machine combines a centerless feed polishing machine with a vertical or horizontal belt grinder, surfacer, polisher or buffer. Ideal for cylindrical polishing or straight line finishing on flat work. Can be used for anything that can be ground or polished—metals, rubber, fibre, wood, etc.

Write for Illustrated Folder

PRODUCTION MACHINE CO.
Greenfield **Mass.**

YOU know what you want in a rack coating: ease of application, long life with a minimum of re-coating, resistance to treeing, resistance to salt accumulation, and certainty that nothing in the coating will contaminate your solutions.

Well, U. S. Stoneware's Rack Coating 266 fills the bill. *Ease of Application:* An air dry dip coating that requires only 3-4 dips to build up a thickness of 1/16". *Long Life:* Electroplaters tell us that Coating 266 is standing up longer than any coating they have ever used. *Resistance to Treeing:* The basic resins used in Coating 266 have even greater electrical resistivity than the best rubber. *Resistance to Salts Accumulation:* The smooth, hard-to-wet, non-porous surface of Coating 266 refuses to let salts accumulation get started. *Freedom from Contamination:* Coating 266 is made from Tygon plastics whose non-toxic, inert properties have made it popular in laboratories, hospitals, food and beverage plants.

If you aren't using Coating 266 place a trial order with your dealer today. You'll like it.

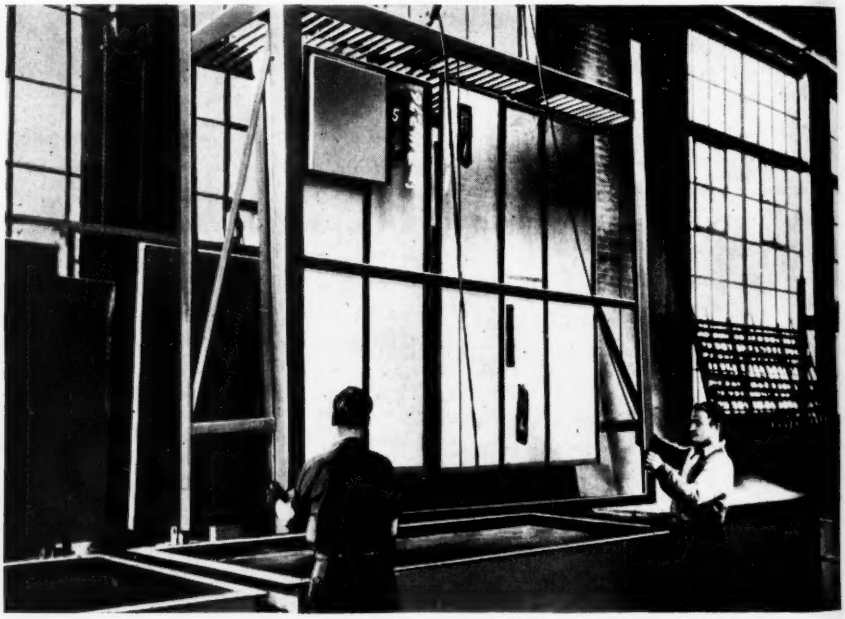
PRACTICAL APPLICATIONS *of Modern Products*

Elevator Interiors Are Finished to Retain Tonal Values and Reflectiveness

SUPPLIED in 61 colors and extra-flat, flat, semi-gloss, and high-gloss finishes, Otis Elevator Company cab interiors must retain their original tonal values and degrees of reflectiveness for many years. In addition, the surfaces must be hard, tough, and flexible to withstand service and abuse without becoming marred, chipped, or cracked. The accompanying illustrations show how the desired finishes are obtained in Otis', Harrison, New Jersey plant.

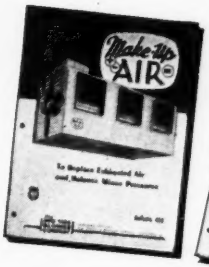
Figure 1 shows two elevator cab panels being removed from a tank in which they have been phosphatized to protect the steel surfaces against rust. In Fig. 2, a cab panel is shown being hand rubbed with sandpaper and gaso-

Fig. 1—Elevator cab panels being removed from a tank in which they have been phosphate treated to resist rust

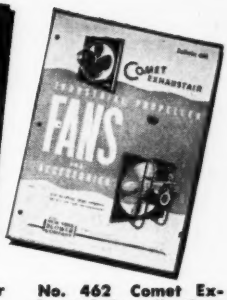


No. 461 Type GI Industrial and Heat Fans. For dust and gas removal, conveying materials, and handling of hot air and gases in industrial processes. 13 sizes. 450 CFM to 60,500 CFM.

No. 463 General Purpose (Jeep) Fans. Portable, self-contained units for Class I Industrial and Ventilating applications. Direct connected and belt driven models. 8 sizes. 400 CFM to 18,000 CFM.



No. 453 Make-Up Air Unit. To replace exhausted air and balance minus pressures. Outside air is warmed, cleaned and delivered in definite quantities to balance known loss. 4 sizes. 5000 CFM to 20,000 CFM.

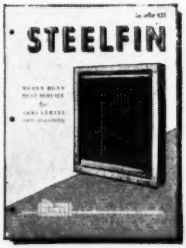


No. 462 Comet Exhaustair Propeller Type Fans. For handling large volumes of air at low resistance. 8 sizes. 400 CFM to 22,000 CFM.

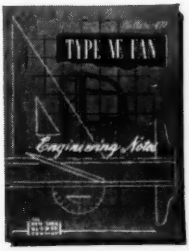
"It's in the AIR"

Are you using AIR to the best advantage in your production methods? To cut costs, increase efficiency, reduce absenteeism, safeguard health, bring comfort to workers? Air efficiently applied to process control makes possible precision manufacture and more uniform products.

When working on your air handling problems, you should have these new bulletins with their complete engineering data at hand. Any or all sent promptly upon request.



No. 451 Steelfin. Heavy Duty Heat Surface. For industrial applications. All steel welded construction. Suitable for continuous heating service on steam pressures up to 150 pounds.



No. 471 Type ME Centrifugal Fans. With slow speed or medium speed wheels with non-overloading horsepower characteristics for heating, ventilating, air conditioning or industrial applications. Capacities up to 101,000 CFM. Certified ratings.

No. 454 Comet Unit Heaters. Welded steel fin-and-tube heating element guaranteed to withstand high steam pressures. 9 sizes. 31 Mbh to 300 Mbh.

The NEW YORK BLOWER COMPANY
GENERAL OFFICES
3166 SOUTH SHIELDS AVENUE • CHICAGO 16
FACTORIES at LA PORTE, IND. and CHICAGO, ILL.

Fig. 2 — Elevator cab panel being hand rubbed with sandpaper and gasoline to ensure a smooth finish

line to ensure a smooth finish. The operation is repeated two to five times on each panel, depending upon the number of coats of lacquer applied. Each coat is rubbed before the next coat is applied.

A coat of pyroxylin lacquer is shown being sprayed on a cab panel in Fig. 3. Since the panel is to have a semi-gloss finish, three such coats are to be applied. Fig. 4 shows the final coat of clear lacquer on an elevator cab door being buffed to produce a high-gloss finish. The face of the polishing disc consists of lamb's wool.

As many as six coats of lacquer are used on Otis elevator interior panels, canopies, and doors. The company recommends a flat finish for canopies with direct lighting, in which it uses a coat of flat lacquer atop three coats of lacquer pigmented with the desired color; for canopies with indirect lighting, one coat of very flat lacquer over three coats of pigmented lacquer. Panels and doors are given either semi-gloss or high-gloss finishes, depending upon the requirements of the customer. For the semi-gloss surface, three coats of pigmented lacquer are used, and, for a high-gloss finish, the company applies three coats of pigmented lacquer plus three coats of clear lacquer.

Otis colors are divided into four classes: solids; Metalusters, having a metallic sheen; Metaluster Hammertones, providing a metallic sheen and an appearance of depth created by a pitted undercoat; and wood grains, simulating the grains of wood

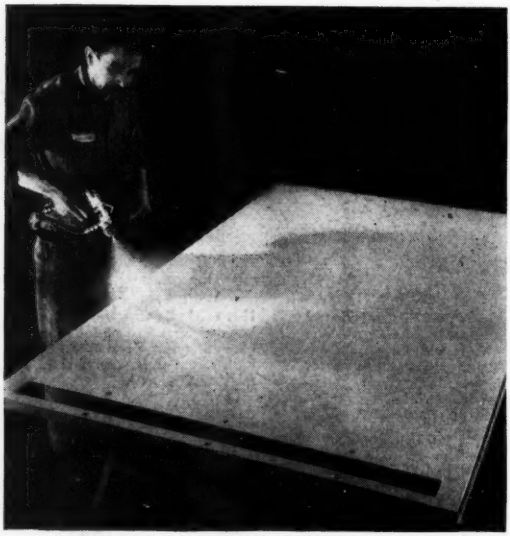
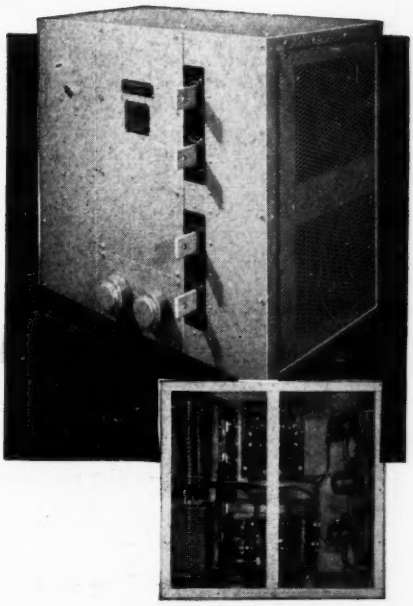


Fig. 3 — Pyroxylin lacquer being sprayed on an elevator cab panel

INVESTIGATE!

BEFORE YOU INVEST IN DC POWER



WAGNER-TIEDEMAN ELECTROPLATING RECTIFIER

Offers:

- FLEXIBILITY
- SIMPLE SERVICING
- LOW INSTALLATION COST
- LOW OPERATING COST
- LOW MAINTENANCE COST

Selenium-on-aluminum cells handle momentary overloads up to 1000% of normal. Effective rectifying area over 4300 square inches. Three 40-watt fans provide ample low-velocity cooling. Transformer, two winding type, reserve capacity. Welded steel enclosure for vertical stacking if higher power is desired.

Output, 6 v. at 1500 amp., 12 v. at 750 amp., Input, 220/440 v. 60 cycle 3 ph., power drain approximately 12 Kw. at full load. 34" high, 36" long, 22" wide, floor area 5.5 sq. ft. Weight, approximately 500 lbs. Other voltages and current capacities available.

GET THIS BULLETIN OF *Facts* . . NOT FICTION

Write today for "Wagner-Tiedeman Engineering Memorandum on Electroplating Rectifier"

METAL FINISHING EQUIPMENT

Wagner BROTHERS INC.

POLISHING AND PLATING MATERIALS

431 Midland Avenue — Detroit 3, Michigan

Fig. 4—Final coat of clear lacquer on an elevator cab door being buffed to produce a high-gloss finish

and wood veneers. Pyroxylin lacquers, introduced by Otis in 1920 as a finish for elevator cabs, are used with all color groups except the Metaluster Hammertones. In these colors, synthetic lacquer is used for undercoating, since pyroxylin dries too quickly to permit the creation of the pitted or hammered effects.

Phosphatizing Process Utilizes Gas Immersion Heaters

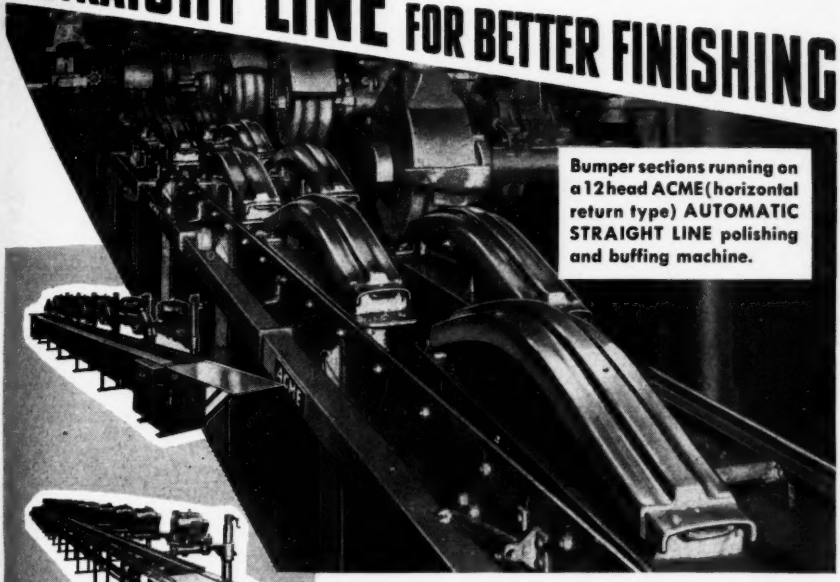
MASS production in the automotive industry, whether on finished automobiles or on the numerous parts that make up a finished car or truck, is carried out with the aid of large conveyor systems. A process which is being widely used for preparing body parts, fenders, aprons, and the like for painting is phosphatizing. This process provides for thorough cleaning of the metal and also prevents rusting long enough for the parts to reach their ultimate destination for finishing.

One of the largest plants using the phosphatizing process is the Parker-Wolverine Division of The Udylite Corp., Detroit, Mich. In this modern plant, huge overhead conveyors are used to carry all sizes and shapes of automotive stamped and pressed metal parts through the several steps of a continuous phosphatizing process.

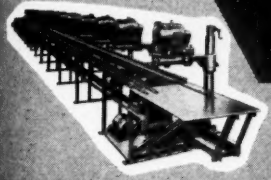
The entire process is performed with the aid of an 860-foot overhead conveyor chain which carries the various parts suspended from hangers located on 18-inch centers. The conveyor travels at the rate of 16½ feet per minute, the entire travel cycle takes about 55 minutes, and the capacity of the conveyor is 12,000 large parts or 50,000 small parts per 24-hour day. The process consists of first washing the parts with various solutions heated to specific temperatures in large tanks by gas-fired, forced exhaust immersion burners. The extent of the gas operations can be judged by the fact that the total input of all of the solution tank heating burners is nearly 14 million B.T.U. per hour.

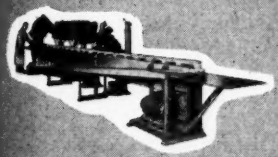
A significant detail of the gas-fired immersion burner equipment is the automatic time-clock control whereby the burner equipment is started and stopped at predetermined times. This control is in addition to the solution tank temperature controls and is designed for the purpose of full automatic operation. It is set to start the operation of the burner equipment at a certain time before a shift comes on the job to ensure that the solutions are up to temperature when work commences. Conversely, the control is shut off at the end of shifts and for Sundays and holidays.

A STRAIGHT LINE FOR BETTER FINISHING



Bumper sections running on a 12 head ACME (horizontal return type) AUTOMATIC STRAIGHT LINE polishing and buffing machine.





Horizontal return, over and under, and loose fixture with power return are straight line arrangements that can be furnished.

ACME AUTOMATIC STRAIGHT LINES have proven, in plant after plant, to be the short cut to increased production and finer finishing. Whatever the item, if it's adaptable to straight line finishing, you can depend on an ACME AUTOMATIC to speed up production in your polishing and buffing department. In addition, ACME builds all types of Semis and Rotary Automatic polishing and buffing machines.

Send samples and details for recommendations as to the most efficient automatic machine operation.

SPECIAL MACHINERY AUTOMATIC BUFFING MACHINES

ACME Manufacturing Co.

1645 HOWARD ST. DETROIT 16, MICH.

Builders OF AUTOMATIC POLISHING AND BUFFING MACHINES FOR OVER 35 YEARS

Fig. 1—This illustration provides a view of the starting point of the conveyor line at the Parker-Wolverine Division of The Udylite Corp., Detroit, Michigan.

The exhaust blowers on the burners are interlocked with the gas valves to prevent the gas being turned on until the blowers have been running a full 5 minutes to completely purge the equipment. Another automatic control is provided which operates during shutdown periods, turning on gas-fired space heaters should the temperature in the plant go below the freezing point of the solutions. Every known device to ensure complete protection to plant and equipment has been installed by the company, and is as fully automatic as possible.

As a result of all this automatic control equipment, the only physical handling operations that are performed are unloading of the trucks which bring the parts to be processed and the hanging of the parts directly on the conveyor chain at the unloading platform, as shown in Fig. 1. After processing of the parts, the conveyor passes a loading platform where the finished pieces are taken from the chain and loaded directly onto trucks which transport them to their ultimate destination—the automobile assembly plants.

The first stage of the processing is a thorough washing of the parts with water containing a grease solvent plus a small amount of alkali. The deluge sprays are supplied with the cleaning solution from a 3,200-gallon tank by pumps at 160 deg. The gas-fired immersion burners on this tank have a 4½ million B.T.U. input. The solution drains off, is screened and recirculated.

TIME PROVEN!

• Robinson's Assayed Gold Plating Solutions and Salts have come a long way since their pioneered introduction back in 1936. Robinson was first to answer the need of the plating industry for standardization and greater ease and economy in plating operations. Continued uniform results from products compounded only from U. S. Government Treasury Gold and the highest quality chemicals has gained for Robinson wholehearted acceptance by critical technical buyers and platers. All Robinson's Plating Solutions and Salts come in a variety of colors and shades to meet changing styles. Labels are plainly marked as to "certified" gold content and weight.

If you need a durable, long-lasting *white finish* at low unit cost, specify Rhodium—a precious metal of the platinum group. We distribute the internationally known Johnson-Matthey Rhodium Solutions.

- 24K LIQUID GOLD CONCENTRATE—Used for Flashing and Coloring.
- SPX #3 LIQUID GOLD UNDERCOAT—Used as undercoat on brass, copper, silver and soft soldered work.
- SPX #5 LIQUID PINK GOLD—Provides uniform pink finish.
- POTASSIUM GOLD CYANIDE SALTS—(41%, 46%, 50% and 67.5% gold content).
- *Many new shades to meet changing styles are available.*
- RHODIUM SOLUTIONS—We distribute Johnson-Matthey Rhodium Solutions that provide an excellent, long-lasting white finish at low unit cost.

Liquid Gold Plating Concentrates — 100% gold content. Complete line in a variety of colors for all specific needs. Sold by Troy weight.

POTASSIUM GOLD CYANIDE SALTS — (41%, 46%, 50% and 67.5% Troy or Avoirdupois. Bottled in quantities desired.

Feel free to write—your inquiries become our immediate concern! Ask for our booklet, "Precious Metal Plating"—it's FREE!

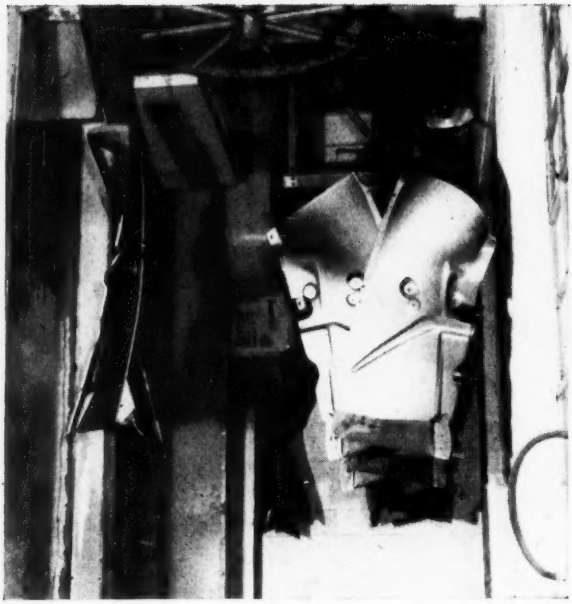


Fig. 2 — Cleaned and phosphatized fender aprons suspended from the conveyor chain enter the convection drying oven section at the Parker-Wolverine Division of The Udylite Corp., Detroit, Michigan.

After washing, the parts are conveyed to a clear water rinse, also heated by immersion burners of 2,800,000 B.T.U. input to 150 deg. Fahrenheit.

From the rinse tank, the conveyor goes into the phosphatizing section where a solution provides for a phosphate coating on the metal. In this section, also, deluge sprays cover every part of the metal with the phosphate solution which is heated at 130 deg. F. in a 2,700-gallon tank by gas fired, forced exhaust immersion burners having 2,750,000 B.T.U. input. From this section the parts travel through a clear cold water rinse.

The final operation consists of spraying the parts with dilute chromic acid at 150 deg. F. pumped from a 1,940-gallon tank heated by immersion burners of 1,800,000 B.T.U. input. The parts are then conveyed into a dry-off convection oven 75 feet long x 4 feet wide, as shown in Fig. 2, which is heated by gas-fired outside air heaters of 2 million B.T.U. input at from 225 to 275 deg. F., depending upon the size of the parts being processed. The thermostats on the air heaters are set for whatever temperature is required for the particular batch of parts that is being processed. From the drying oven, the conveyor passes the loading platform and the cycle is repeated.

Despatch Finishing Equipment. The Despatch Oven Co., 619 S. E. 8th St., Minneapolis 14, Minn., has prepared a 16-page bulletin which illustrates and describes its complete line of gas-oil, electric, and steam finishing equipment, including ovens, dryers, air heaters, spray booths, flow coating equipment, conveyors, metal cleaning and rustproofing equipment, air conditioning equipment, and make-up air systems. Typical installations of the various equipment are shown and explained. Copy of Bulletin 51 free upon request.

Permolite Protective Coatings. The Permolite Division, Cyclic Chemical Co., P. O. Box 656, Hamilton, Ohio, now has available a 20-page booklet containing descriptive information on baking and air dry type coatings for the complete protection of such equipment as process and storage tanks, fume hoods and duct systems, pipes for the handling of corrosive solutions, fans and blowers, textile machine parts, chemical pumps, filter presses, cooling and heating coils, air conditioning equipment, and hot water tanks. Copy free upon request.

"FINISHES"... *by Stanley*

Buttons or buckles, clips or clasps . . . all have at least one thing in common. And that is their special Stanley finish. In one case the special finish gives *extra* protection to the base metal. In another it preserves highly polished surfaces. In still another, it takes the form of an unusually durable enamel.

"Special finishes for special applications" is big business at Stanley for, in our large research laboratories, highly trained specialists solve hundreds of difficult finishing problems every year for our customers. Maybe *you* have such a problem. If so, tell us about it . . . chances are we can help.

STANLEY

STANLEY CHEMICAL

INDUSTRIAL COATINGS

LACQUERS SYNTHETICS JAPANS ENAMELS

STANLEY CHEMICAL COMPANY • EAST BERLIN, CONN.

NEWS of the Industry

MacDermid Opens Los Angeles Office and Warehouse

MacDermid Inc., Waterbury, Conn., announces the opening of an office and warehouse in Los Angeles, California. G. Stuart Krentel, former Chicago manager, has been appointed West Coast manager, with headquarters at 1101 S. Los Angeles St., Los Angeles 15, Calif. A complete stock of cleaning compounds and bright copper supplies will be carried at the warehouse for the convenience of West Coast users.

G. Stuart Krentel

Mr. Krentel received an M.S. degree from Michigan State College and has been associated with the plating industry in production and in sales and service work since 1933. He has had a broad practical background in metal-finishing problems which will enable him to be of assistance to metal-finishing firms in the West Coast territory.

H-VW-M Adds to Staff

The Hanson-Van Winkle-Munning Co., Matawan, N. J., announces the addition of Walter A. Cary to its sales and service staff. Mr. Cary is a graduate of Fordham University with a B.S. degree in chemistry and has had wide experience in the plating industry. He has taken an extensive training course at the Matawan plant and has now been assigned to the New York State territory.

Savage Joins Standard Plating Rack Company

Frank K. Savage, past president of the American Electroplaters' Society, has joined the Standard Plating Rack Co., 1925 N. Paulina St., Chicago 22, Ill., as assistant to the vice president. Mr. Savage, who was A.E.S. president for the year 1946-47, received his B.S. degree in chemical engineering from Michigan State College in 1935, from which time to 1945 he was successively chemist, plating foreman, chief chemist, and general superintendent of C. G. Conn, Ltd., Elkhart, Ind. From 1945 until his present appointment, Mr. Savage was an electrochemical engineer for the Kuehne Manufacturing Co., Mattoon, Illinois.

Mr. Savage has been active in A.E.S. affairs for the past several years. In 1941-42 he was president of the Chicago Branch. In 1944 and 1945 he was a member of the various research committees and vice president of the society for two terms prior to becoming president.

Teknillinen Korkeakoulu Needs Books

Finland's Technology Institute, Teknillinen Korkeakoulu, was bombed during the war and totally destroyed. Inasmuch as it is presently difficult to replace this library, the Director of the Institute, Dr. Martti Levon would welcome gifts of scientific and technical books from America to take the place of those that were destroyed. It would be a practical act of friendship to a nation that holds America in high regard if American engineers and production men would contribute technical books and periodicals to this library.

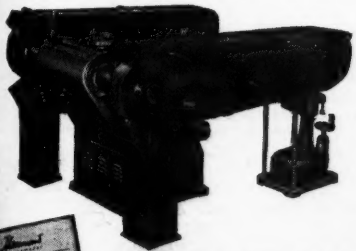
Packages of books should be marked for the "Institute of Technology, Helsinki," and addressed to the Finnish Legation, 2144 Wyoming Avenue, N. E., Washington, D. C.

IS YOUR FINISHING ROOM STILL IN THE "GAY 90's"?

Hammond of KALAMAZOO

BACKSTANDS

Hundreds of plants, large and small, have materially stepped up finishing production by converting their wheel grinding and polishing equipment to high-production abrasive belt units with Hammond Backstands. Modernize your finishing department this quick, easy economical way. Write today for literature!



WRITE FOR CATALOG 55
Shows Hammond Backstands, Polishing Lathes, Abrasive Belt and Automatic Finishing Machinery. Write today!

Hammond Machinery Builders INC

1622 DOUGLAS AVENUE • KALAMAZOO 54, MICHIGAN

Pierce & Stevens Appoints Two

As part of a long range expansion program, Pierce & Stevens, Inc., Buffalo, N. Y., manufacturer of lacquers and allied protection coatings, adhesives, thinners, and special solvent blends, has added John A. Russell and Byron C. O'Keefe to its sales staff. Mr. Russell, formerly sales manager of the Clairville of Philadelphia Corporation, will represent the organization as a field engineer

(Left) John A. Russell (Right) Byron C. O'Keefe

in the Philadelphia district. Mr. Russell attended the University of Pennsylvania prior to four-year Navy service.

Mr. O'Keefe, recently engaged in chemical sales engineering and service with the Chapman Chemical Company, Chicago, and formerly with E. I. Du Pont, has been appointed field technician and will serve in and around the Buffalo area.

Mosher Joins Quaker Chemical

The Quaker Chemical Products Corp., Conshohocken, Pa., announces the appointment of Dr. Hugh H. Mosher as director of organic research. Dr. Mosher comes to Quaker after 14 years with the Onyx Oil & Chemical Company where he was vice president in charge of textile research and development.

Dr. Mosher is exceptionally well known in industrial chemistry. He completed his undergraduate and graduate studies at Leland Stanford University after which he served as assistant professor of chemistry at the University of Nevada. He next became chief chemist for the U. S. Testing Company and then research chemist for Cheney Brothers Silk Mills.

Appointed Senior Engineer of Research Division

H. C. Martin, technical director of The Carborundum Co., Niagara Falls, N. Y., announces the appointment of Dr. Gurdon M. Butler, Jr. as a senior engineer of the Research Division. Dr. Butler was formerly an associate director of research of the Tool and Die Steel Division and later chief metallurgist at the Dunkirk, New York plant of the Allegheny Ludlum Steel Corporation.

In 1933, Dr. Butler graduated with highest honors from the University of Arizona with a B.S. degree in chemistry. In 1934, he received an M.S. degree in metallurgy from the same university. From 1934 to 1937, he continued his scientific studies at the Massachusetts Institute of Technology and was awarded a doctor of science degree in metallurgy. Dr. Butler is the author of many scientific papers and lectures and is a member of several honorary societies, including Phi Beta Kappa and Tau Beta Pi.

A.E.S. Newark Branch Annual Winter Educational Session

The Newark Branch of the American Electroplaters' Society announces that its annual winter educational session will be held on December 20, 1947 at the Robert Treat Hotel in Newark, N. J.. at 2:30 p. m. To accelerate the progressive trend shown in the plating industry in recent years, the educational committee of the Newark Branch has arranged for the following pertinent and educational subjects to be presented by the well qualified speakers listed as follows: "Electroplaters' Metals of the Future," by Dr. F. A. Lowenheim, Metal & Thermit Corp., Rahway, N.J.; "Periodic Reverse Plating," by Myron B. Diggin, Hanson-Van Winkle-Munning Co., Matawan, N. J.; and "Surface Finishing of Aluminum and Its Alloys," by Milton Nadel, Consolidated Razor Blades, Jersey City, N. J. A discussion period will follow each subject immediately after presentation.

Following the educational session, the Newark Branch will hold its annual Christmas party, which will include a full course dinner that will be served at 7:30 p. m., after which entertainment and music will be furnished for the remainder of the evening. A cordial invitation is extended to anyone interested to be present at both the educational session and Christmas party.

DESPATCH

Finishing System

A large midwest refrigerator manufacturer boosted production 27% when this *automatic* DESPATCH Finishing System was installed. In a *limited* floorspace only 25'x450' he finishes 1100 refrigerators in 8 hours *at 43% lower cost!*

Space was saved by installing a compact, multi-pass, gas fired dryoff oven directly over the 6-stage Spra-Bonderite section. A thorough, 25-minute dry-off at 300-350° F. eliminates extra labor of a blow off operation. Traveling about 18 f.p.m., the variable-speed monorail conveyor carries the work thru Bonderite, up into dryoff, then down again for transfer to paint conveyor.

Split conveyor system permits *independent* operation of paint or Bonderite with minimum loss of productive time and avoids complete shutdowns.

Automatic spray guns are mechanically synchronized with special floor-type conveyor to paint sides and top. Prime and finish coats are applied in 7 staggered spray booths in a 107-foot enclosure supplied with heated and filtered air. Windows permit observation without going inside. As the boxes emerge, only ONE touch-up man is required to finish the job.

Boxes and parts travel up into the gas fired finish baking oven at 12 f.p.m. by variable-speed conveyor. Baked uniformly for 47 minutes at 300-350° F., they descend from this 4-horizontal-pass, 22'x136' oven to floor level for unloading and assembly.

Whatever *your* problem, the wide experience of DESPATCH engineers can help solve it *quickly and efficiently*.

DESPATCH OVEN COMPANY

Minneapolis Office:
619 S. E. 8th Street

Chicago Office:
211 N. LaSalle Street

Offices in All Principal Cities

DESPATCH
OVEN COMPANY

Heads S-W Western District Industrial Sales

The appointment of Claude F. Harris as western manager of industrial sales of The Sherwin-Williams Company, with headquarters in Chicago, Illinois, is announced by G. L. Hehl, general manager of the company's Industrial Sales Division. Mr. Harris succeeds Lyman V. Weber, who held the post for a number of years but who has been unable to continue because of ill health.

Claude F. Harris

Widely known in the paint field, Mr. Harris joined Sherwin-Williams January 1, 1938 to handle national accounts. Later he was made industrial sales representative for the Wisconsin area, which position he held prior to the time of his present appointment.

Mr. Harris has an exceptionally broad background of experience in wood, metal, and plastic product finishing and other phases of industrial finishing. He filled an important administrative position with a prominent paint manufacturer in the Detroit area where he was located prior to becoming associated with The Sherwin-Williams Company.

Joins Pennsalt Research and Development Division

Samuel Spring, formerly a research specialist for the Federal Government, has been appointed to the research and development staff of the Pennsylvania Salt Manufacturing Company. He will have charge of the inorganic research group at Pennsalt's Whitemarsh Research Laboratories.

A native of New York City and a graduate of the College of the City of New York, Mr. Spring received his master's degree at Columbia University. For two years he served on the faculty of the City College of New York and later became associated with the Frankford Arsenal where he supervised research on metal cleaners and metal-working lubricants for the last seven years.

G. H. Moyer Promoted

The promotion of George H. Moyer from Chicago district manager to sales manager of the North Central region has been announced by John W. Van Tuin, sales manager of the Western Division of the Nuodex Products Co., Inc., Elizabeth F, N. J., manufacturer of paint driers, wetting and grinding aids, and other chemical specialties.

Mr. Moyer, whose headquarters will remain at the Nuodex office in Chicago at 600 South Michigan Avenue, will be responsible for the direction of sales in the Chicago area, as well as of the Nuodex activities in the states in his territory which includes Illinois, Indiana, Wisconsin, Minnesota, Iowa, Missouri, Kansas, Colorado, Nebraska, South Dakota, North Dakota, Montana, and Wyoming.

Ball Industry Executive Joins Pioneer

Pioneer Steel Ball Inc., Unionville, Conn., announces the appointment of J. H. Donahue as secretary and general sales manager. In accepting this new post, Mr. Donahue has resigned his position with a Texas publishing house to return to the industry with which he was associated from 1930 to 1945. His extensive knowledge of steel ball applications in both anti-friction and ball burnishing fields will enable Pioneer to better serve users of its products.

J. H. Donahue

H-VW-M Field Force Changes

The Hanson-Van Winkle-Munning Co., Matawan, N. J., announces that Arthur C. Pearson has been transferred from the Philadelphia office to New England where he will be associated with Frank J. Clark in covering Massachusetts and nearby territories. In addition, Howard L. Wright has been transferred from the New York State territory to Philadelphia.

BUT . . .

The motor-wise public of this generation demands the best in automotive engineering. Where aluminum — and its alloys—are being processed

Alodizing* With Alodine*

is as drastic an improvement over methods of the past—as today's automobiles are over the horseless carriage "ALODINE"-coated and sealed aluminum — either painted or unpainted — is effectively protected. "ALODINE" requires no electricity or special skill—no high temperatures. In two minutes, and less, the job is finished. ALODIZED* aluminum is highly corrosion resistant — provides a tenacious bond for paint—saves time and labor—and reduces production costs.

CHEMICALS ACP PROCESSES

RUST PROOFING AND PAINT BONDING

Granodine *
Duridine *
Alodine *
Lithoform *
Thermoil-Granodine *

RUST REMOVING AND PREVENTING

Deoxidine *
Peroline *

PICKLING ACID INHIBITORS

Rodine * ®

* "ALODINE" ® for Metal Coating Chemicals

AMERICAN CHEMICAL PAINT CO.
AMBLER ACP PENNA.

Changes in Brush Sales Personnel

The Osborn Manufacturing Co., Cleveland, manufacturer of brushes for industry, announces two changes in its Brushing Division sales organization. G. E. Mehleck, sales representative and field engineer in the Southeastern territory embracing Maryland, Virginia, North Carolina, and South Carolina, has been

(Left) Ralph H. Martin (Right) G. E. Mehleck

transferred to the company's Chicago district office. Ralph H. Martin has been assigned to the territory formerly covered by Mr. Mehleck.

A graduate of Western Reserve University, Mr. Mehleck has been associated with Osborn for six years and has assisted in the development of new uses for brushes and brushing methods in the Southern and Southeastern areas. Mr. Martin, a graduate of Carnegie Institute of Technology with a B.S. degree in chemical engineering, recently served in the U. S. Navy as liaison officer on special development projects for the Bureau of Aeronautics. Prior to that, he was associated with the Westinghouse Electric Corporation in Pittsburgh.

Ferro Opens Southern Plant

To meet the growing demand for porcelain enamel frit in the South and Southwest, the Ferro Enamel Corp., Cleveland, Ohio, has established in Nashville, Tennessee, a streamline manufacturing plant which is highly mechanized and equipped with modern devices for laboratory and production control. With the present facilities and the contemplated expansion, company officials state that the Nashville plant will be sufficient to produce an ample amount of porcelain enamel frit to take care of the consumption of stove, refrigerator, sign, bathroom fixture, and furniture manufacturers in producing porcelain enamel products.

The plant is operating with three shifts, 24 hours a day, 6 days a week. It is now turning out porcelain enamel frit at the rate of eight million pounds a year and, with the installation of an additional smelter, production will be increased to twelve million pounds a year. The company is now in the process of expanding its operations with the construction of a clay processing plant at a cost of approximately $100,000 adjacent and to the South of the present plant. This new unit will produce refined clay for the industry and distribute it throughout the Central, Middle West, and Southern states. Additional distribution will also be made to some Northern states.

Papers for A.E.S. 1948 Convention

Five educational sessions will be conducted during the American Electroplaters' Society Convention to be held at the Ambassador Hotel in Atlantic City from June 28 to July 1 inclusive. One of the five sessions will be devoted to the reports of A.E.S. research projects.

Following the custom of the past few years, the Society plans to devote one or two sessions to group papers, all papers at one of these sessions relating to a general subject. Some of the suggestions under consideration are: (1) barrel plating, (2) tumble methods for preparing work for plating and for finishing after plating, and (3) electropolishing (methods in commercial use).

In addition to papers on the special subjects listed above, papers on miscellaneous subjects are solicited. Prospective authors are urged to submit papers or signify their intention of doing so as soon as possible so that the Educational Committee can plan the program most effectively. All papers must be submitted in triplicate not later than April 1 and abstracts for inclusion in the convention program announcement not later than March 1. In order to plan a well-balanced educational program, the committee urges A.E.S. members, branches, and non-members to take advantage of this opportunity to present their work before the Society.

MICCROTEX

AIR-DRY RACK COATING

MICCROTAPE — An extruded tape with tapered edge to permit smoother overlapping and closer fit around shoulders. Unaffected through all plating cycles.

MICCROTUBE — An extruded tubing for use on straight or bent contact wires, also round splines. Fuses with Miccrotape into a perfect leakproof coating.

☆

Use MICCROMASK for selective hard chromium plating.

Use MICCROLAC for protection of decorative metal finishes.

Use MICCROLOID as an industrial resistant against corrosion.

Write for detailed bulletins on these MICCRO products.

✓Check THESE BASIC FEATURES:

MICCROTEX is a superior thermoplastic insulating material developed by experienced platers.

MICCROTEX meets the requirements of all plating cycles and phosphate coatings.

MICCROTEX may be dipped, brushed or sprayed with equal effect.

MICCROTEX is a black material with a high luster — highly resistant to plating solutions, acids and alkaline cleaners at boiling temperatures.

MICCROTEX is tough, resilient, and flexible — attains maximum adhesion without shrinkage.

MICCROTEX effectively minimizes dragout — is easy to use — saves time and material in application.

MICCROTEX is blazing a new trail in plating techniques . . . answering the great need for an air-dry rack coating that overcomes the difficulties commonly found in applying lacquers. Try it!

MICHIGAN CHROME
and Chemical Company
6340 East Jefferson Avenue • Detroit 7, Michigan

MICCRO Products

Developed and Manufactured by Experienced Platers

Michigan Chrome Appoints Mid-West Representative

King Ruhly has been appointed Mid-West sales representative by the Michigan Chrome and Chemical Co., 6340 E. Jefferson Ave., Detroit 7, Mich. Mr. Ruhly will represent the complete line of Miccro products, including rack coatings, stop - off lacquers, and corrosive resistants for the plating industry, and will cover Indiana, Illinois, Wisconsin, Missouri, Iowa, and Minn.

King Ruhly

Mr. Ruhly was graduated with honors from Wayne University, Detroit, in 1939. He continued study on his master's degree while serving as principal and teacher at Franklin School, Franklin, Mich. After a brief period in the personnel department with Vicker's, Inc., Detroit, he enlisted in the Navy. He was commissioned an ensign in 1944 and served in both the European and Pacific theaters, receiving his discharge as lieutenant (j.g.) in 1946.

After a year with the Veterans Administration, supervising on-the-job training for disabled veterans, Mr. Ruhly joined the sales staff of Michigan Chrome and Chemical Company and received a thorough background training in the application of the company's line of Miccro products.

Two Join Pennsalt Sales Staff

The Pennsylvania Salt Manufacturing Company announces that Charles B. Sorber, Jr., of Philadelphia and John L. Dawson of Cleveland have joined the sales staff of the Special Chemicals Division and are now undergoing training.

Mr. Sorber is a graduate of Pennysylvania State College and spent three years in the Navy in the Pacific. Prior to joining Pennsalt, he was with Proctor & Schwartz. Before joining Pennsalt, Mr. Dawson was a salesman for the W. B. Davis Company in Cleveland and previously spent two years in the Army.

Consolidates New York Office and Warehouse

Morris M. Messing, president of the Bart-Messing Corporation, announces the consolidation of the firm's New York office and warehouse in its new plant at 4500 Morgan Avenue, Brooklyn 6, N. Y. The manufacturing division will also be housed in the new plant.

In addition to the standard line of "Sel-Rex" rectifiers, the engineering department is geared to build custom-made conversion units to specifications or original design. The engineering department is headed by Eduardo R. Redlhammer, chief engineer, and Albert Zedelis, design engineer. Morris M. Messing is president in charge of sales and S. G. Bart, vice president in charge of production and procurement. The auditing department is headed by Sidney Frankel, comptroller. The company also maintains a research department for electroplating plants.

Wise Heads Buffing and Polishing Composition Division

The Buckeye Products Company, manufacturer of Speedie buffing and polishing compositions and foundry supplies and equipment, announces that Charles Wise, secretary, has been placed in charge of the Speedie Buffing and Polishing Composition Division of Buckeye.

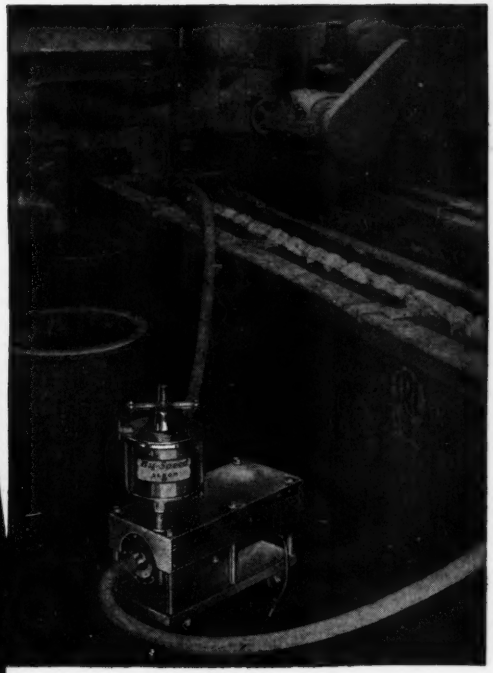
Charles Wise

Mr. Wise, who will be in charge of both manufacturing and sales activities, has been associated with Buckeye since 1928. He served 28 months in the Army and was stationed in British Guiana in the Intelligence Office.

The Buckeye Products Company is now engaged in a program of extensive plant enlargement and modernization to accommodate increased manufacturing demands. A new boiler room is nearing completion. The company's general offices are being reorganized and redecorated to conform to more efficient practices.

The FILTER that Plating Shop Men Are Buying...

...ON ITS REPUTATION



Outstanding for protection against pitting, spotting, poor adhesion, formation of nodules, etc., which mean rejects and reworking, *"Sealed-Disc"* Filters have won high reputation in plating rooms large and small all over the world.

You too, can take advantage of the savings in time and labor by using an Alsop *"Sealed-Disc"* Filter in your plant.

"Sealed-Disc" Filters remove all traces of dirt, dust, oil, sludge and all other impurities from plating solutions. They are light, compact, portable and easy to move from one tank to another for instant use.

Our new catalog gives you all the facts.

The Alsop Engineering Corporation, 211 Keen Street, Milldale, Connecticut.

Send For this New Catalog

Write for your copy of P-347 which tells exactly, how, why and where *"Sealed-Disc"* Filters can help you get finer finished plated work from your plating solutions.

ALSOP ENGINEERING CORPORATION

Filters, Filter Discs, Pumps, Tanks, Mixers, Agitators

Appointed New York District Manager of Electric Products

Gordon J. Berry, vice president of The Electric Products Company, announces the appointment of Robert J. Peck as district manager of the company's New York office at 126 Liberty Street, New York City. Mr. Peck will handle all sales and service negotiations in the territory, which consists of the New England States, Eastern New York and Pennsylvania, New Jersey, Delaware, Maryland, and Virginia.

Robert J. Peck

A graduate of the New York University in 1930, Mr. Peck has since then been actively engaged in the selling, engineering, and servicing of electrical products. He joined The Electric Products Company in May 1947.

Elected Assistant Secretary and Assistant Treasurer

Dr. John F. Thompson, executive vice president of The International Nickel Company of Canada, Limited, announces that Lance H. Cooper of London, England, a member of the staff of The Mond Nickel Company for 20 years and one of its delegate directors since 1945, has been elected an assistant secretary and assistant treasurer of The International Nickel Company of Canada, Limited.

Sets Up Foreign Distributing Points

As an expanded service to overseas and Latin American offices of U. S. manufacturers and their distributors, Kelite Products, Inc., Los Angeles 54, Calif., has recently set up distributing points at Panama City; San Salvador; La Ceiba, Honduras; San Jose, Costa Rica; Curacao, N.W.I.; Mexico City, and Sidney, Melbourne, Brisbane, Newcastle, and Adelaide, Australia.

L. C. Sorensen, president of Kelite, left for Europe early in October to arrange for distribution in South Africa, India, and other points as part of the company's program for world-wide availability of its specialized industrial cleaning materials.

New Members Elected to N.A.M.F. Board

The National Association of Metal Finishers, Inc., 2236 Dime Bldg., Detroit 26, Mich., announces the election of the following new members to the board of directors: Albert W. Olson, Industrial Plating Works, Inc., 3674 4th Ave., S., Seattle, Wash.; F. A. Truden, Southern Finishers, Inc., 1000 6th Ave., S., Nashville, Tenn.; John Hilfinger, Hilfinger Corp., 1800 Westwood Ave., Toledo 7, Ohio; D. J. Griffin, Birmingham Plating Works, 937 N. 17th St., Birmingham 4, Ala.; and Charles W. Logan, Logan Platers Inc., 555 Main St., North Tonawanda, New York.

Additional Acreage Acquired by Carborundum

The Carborundum Co., Niagara Falls, N. Y., announces the completion of negotiations for the acquisition of land as a site for an extensive furnace plant at Vancouver, Washington. The property acquired consists of 93 acres in the outlying district of Vancouver, with extensive frontage on the Columbia River, thus providing ample water shipping facilities. The property is also served by three railroads.

Present plans call for the erection of a silicon carbide furnace plant, including such units as buildings for the preparation of raw materials, a mixing plant, and a crushing unit. The initial plant installation will also include an office, a maintenance building, and an employee facilities building. Ultimately, it is planned to add other buildings to provide facilities for the manufacture and distribution of other products of the company, such as abrasive aluminum oxide, grinding wheels, abrasive grains, coated abrasives, sharpening stones, non-metallic Globar heating elements, and refractories.

BARREL NICKEL PLATING
TO SPECIFICATION!
USING
SEYMOUR BRIGHT NICKEL PROCESSES

Where specific thicknesses of bright nickel plate are desired, use Seymour "NC" or "CK" Bright Nickel Processes in a warm plating bath. The warm type brightener solution permits specification barrel nickel plating of any desired deposit from .0002" to .0010", and at a speed four to six times faster than with a cold solution.

Seymour Barrel Nickel Brightener solutions are also available for cold plating baths where only a decorative deposit of about .0001" maximum is required.

Both warm and cold type brighteners are simple to maintain and easy to control. Deposits from both are adherent to properly cleaned base metals, except zinc base direct, and may be chromium plated without prior buffing or wiping.

Write for bulletins containing complete information.

NICKEL ANODES • NICKEL SILVER • PHOSPHOR BRONZE

THE SEYMOUR MANUFACTURING COMPANY • SEYMOUR, CONNECTICUT

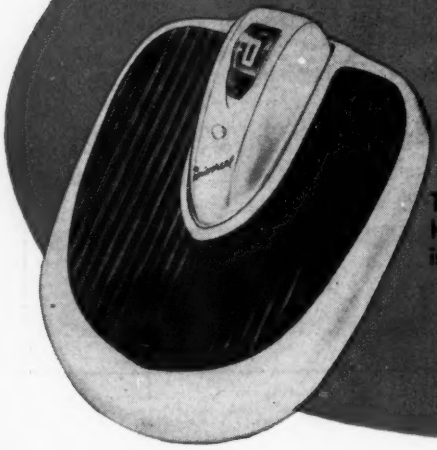
Nonferrous Alloys Since 1878

SEYMOUR

finishes

The finish on this fully automatic calculator consists of weather, wear, and abrasion-resistant synthetic baked gray enamel which is applied on both Bonderized aluminum and steel. The finish is a three-coat job—one coat of primer and two coats of enamel baked on with infra-red equipment.

(Photo courtesy Friden Calculating Machine Co., Inc., San Leandro, Calif.)



The outer metallic surfaces of the health scale depicted herewith are finished in white porcelain enamel.

(Photo courtesy Landers, Frary & Clark, New Britain, Conn.)

...that aid in appearance and utility

The design of the hollow shaft portable electric eraser shown herewith includes a sturdy, lightweight, die-cast aluminum alloy housing having an attractive dull red crinkle finish.

(Photo courtesy Charles Bruning Co., Inc., Chicago 41, Ill.)

...vailable in four sizes designed expressly for medium and large size homes, small apartments, and commercial buildings, this oil-fired horizontal boiler-burner unit includes a handsome jacket having an easy-to-clean, smooth, green Hammerlin finish.

(Photo courtesy York-Shipley, Inc., York, Pa.)

Cincinnati Drum Type Rinsing and Drying Machine

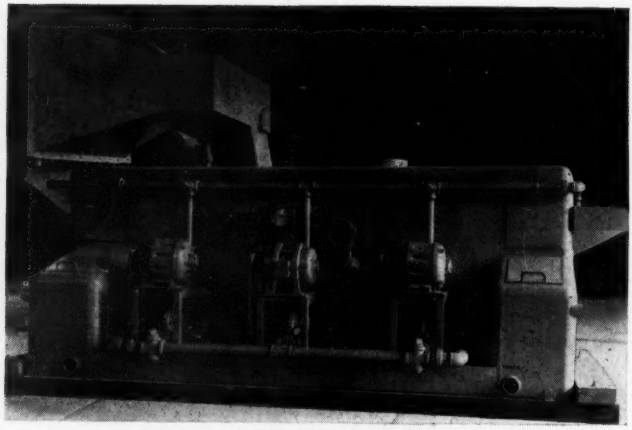
Product of the Cincinnati Cleaning and Finishing Machinery Co., Hecla St., Ironton, Ohio, the drum type machine shown in the accompanying illustration is designed for rinsing and drying parts after plating, and is particularly recommended for use in the automotive, refrigeration, and similar industries.

Either standard or custom built to meet specific requirements, the machine can be easily adapted for cleaning operations. In operation, the parts, after being loaded into a hopper located at one end of the machine, are cold rinsed, hot rinsed, and dried before being discharged.

Peerless 20-Inch Horizontal Belt Surfacing Machine

A 20-inch horizontal belt surfacing machine which can be used wet or dry for the flat surfacing of die castings, plastics, cast iron, steel, alloys, ceramics, and other materials is now being marketed under the trade name of Peerless by the Production Machine Co., Greenfield, Mass. The machine utilizes waterproof bonded abrasive belts 20 inches wide x 12 feet 6 inches in circumference which are available in a full range of grits from 24 (coarse) through 500 (fine). The unit has a standard belt surface speed of 4,600 f.p.m., with other speeds optional.

The work table of the Peerless 20-Inch Belt Surfacer has an available working area of 20 x 30 inches to allow for oscillation of large as well as small parts. A work stop with adjustments for handling all types of parts is provided. The carefully balanced aluminum pulleys of the machine each have a 15¼-inch O. D. x 20¾-inch face and are processed to eliminate belt



Cincinnati Drum Type Rinsing and Drying Machine

HARSHAW ANODES and CHEMICALS

OUR job for more than fifty years has been to concentrate on improving the quality of the anodes and chemicals used by platers. You can depend on Harshaw products to keep your production moving.

NICKEL PLATING . . . nickel anodes—all commercial grades and sizes . . . anode bags . . . nickel salts—single and double . . . nickel chloride . . . nickel carbonate . . . boric acid.

CHROMIUM PLATING . . . pure "Krome Flake" 99.8% CrO_3 . . . sulphates less than .10% . . . lead, tin-lead and antimony-lead anodes.

COPPER PLATING . . . copper ball anodes . . . Rochelle Salts . . . sodium and copper cyanides . . . copper sulfate . . . copper fluoborate.

CADMIUM PLATING . . . ball and cast cadmium anodes . . . cadmium oxide . . . sodium cyanide.

TIN PLATING . . . cast tin anodes . . . sodium stannate . . . stannous sulfate . . . tin fluoborate . . . acid tin addition agent.

ZINC PLATING . . . ball and cast zinc anodes . . . sodium and zinc cyanide . . . zinc sulfate.

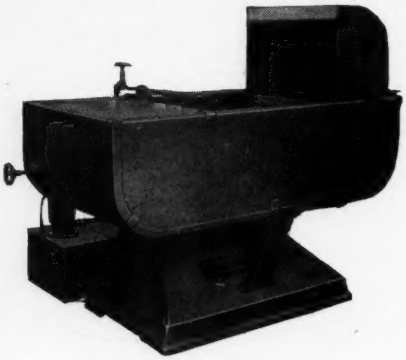
LEAD PLATING . . . cast lead anodes . . . lead fluoborate.

SILVER PLATING . . . silver cyanide . . . silver nitrate.

Stocks are maintained in Cleveland and in branches at Chicago, Cincinnati, Detroit, Houston, Los Angeles, Philadelphia, Pittsburgh, and New York.

THE HARSHAW CHEMICAL CO.
1945 East 97th Street, Cleveland 6, Ohio
BRANCHES IN PRINCIPAL CITIES

slippage. The drive and idler shafts are mounted on ball bearings which are sealed to prevent the entrance of coolant.



Peerless 20-Inch Horizontal Belt Surfacing Machine

Abrasive belts can be tightened by a ratchet lever and tracked by a handwheel located in a convenient position outside of the housing at the left side of the surfacing machine.

The recirculating system of the machine comprises a centrifugal coolant pump mounted in a tank having a 32-gallon capacity and a baffle plate which is readily accessible for cleaning. The main drive motor of the machine is a 10 h.p., 220, 440 or 550-volt, 3-phase, 60-cycle, 1,200 r.p.m. unit with a magnetic starter and push-button control. A ¼ h.p. pump motor with separate magnetic starter and push-button control is also furnished as standard equipment.

The Peerless 20-Inch Horizontal Belt Surfacing Machine occupies a floor space of 61¼ x 86⅝ inches, including tank, motor, and guards. The unit has a net weight of 2,600 lb. and a shipping weight of approximately 3,000 lb. The machine can also be obtained in a 14-inch size.

FOR WOOD AND METAL FINISHES

Use Bright, Rich

HARDCOTE

One Hour Dry

• One coat covers to give your products a beautiful, full gloss finish that can really take it. Hardcote resists acids, alkalis, and weather. Easy to apply by brush, spray or dipping. Tack dries in 15 minutes, dries hard in one hour. Write for color card and information. Made only by

McDOUGALL-BUTLER CO., Inc.

6 Evans Street

Buffalo, New York

Behr-Manning Service Packaging Plan

The Behr-Manning Corp., Troy, N. Y., announces a trade-built repackaging plan for coated abrasives, effective on shipments after January 1948. The plan is described by the company as a planned "tailored" method of packaging coated abrasives in such proper quantities, weights, and invoice values and in such readily identified containers and wrappers as to best serve the functional needs and habits of its distributors, dealers, and consumers alike.

Said to provide for maximum economy and convenience in the buying, selling, handling, and use of coated abrasives, the Behr-Manning Service Packaging Plan is claimed to offer the following advantages: (1) new decimal quantities, (2) new standard master packages, (3) new component resale packages, (4) brand identification by colored labels, and (5) line identification by wrapper design.

Airbrush Service Film

Recognizing the need for better training of distributor salesmen, the Paasche Airbrush Company has completed a sound slide film entitled "The Service Angle." This 30-minute sound slide picture thoroughly covers the subject of service from such equipment.

Users of spraying equipment may procure the film for showing by communicating with the Paasche Airbrush Co., 1909 Diversey Pkwy., Chicago 14, Ill.

RESEARCH-FITTED TO SUIT YOUR NEEDS EXACTLY

CARPET

FELT

MOHAIR

SUEDE

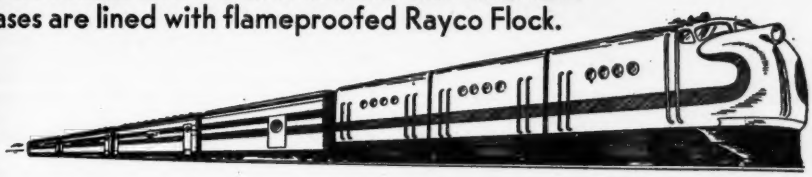
VELOUR

"SPANGLES"

Rayco Flock Synthetic Finishes

IN ANY COLOR—ON ANY MATERIAL

In the FREEDOM TRAIN the historical document cases are lined with flameproofed Rayco Flock.



Rayon Processing Co. of R. I., Inc.

PIONEER PRODUCERS OF SURFACE COATING FLOCKS

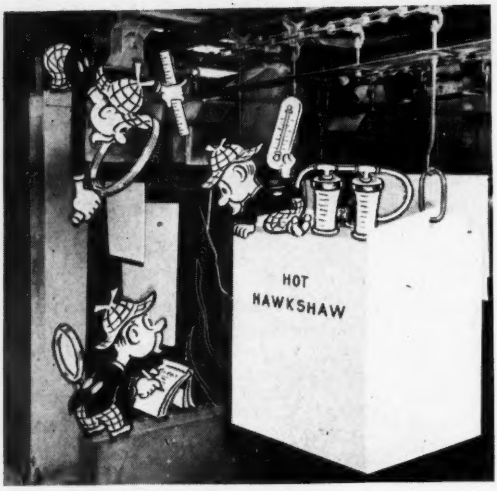
65 TREMONT STREET • CENTRAL FALLS, R. I.

COLONIAL PROCESS SUPPLY CO.
140 W. 23rd St.
New York 11, N. Y.

GRAPHIC ARTS CENTER
908 S. Main St.
Los Angeles 14, Calif.

ATLAS SPEC. MFG. CO.
3255-59 S. Shield Ave.
Chicago 16, Ill.

W. H. HALL
182 Jarvis St.
Toronto, Ontario



Ferro "Hot Hawkshaw" Temperature Recorder

Ferro "Hot Hawkshaw" Temperature Recorder

A temperature-recording instrument which is designed to determine temperature gradients in continuous porcelain enameling furnaces has been developed by the Ferro Enamel Corp., 4150 E. 56th St., Cleveland 5, Ohio. Known as the "Hot Hawkshaw," the electronic three-point recorder is said to determine the exact temperature of the ware in the furnace and at various levels; also, the differences in temperature of light gauge and heavy gauge ware, of furnace loadings, and of burner adjustments. By means of the instrument, the actual ware temperature can be automatically recorded and the operator can set the furnace control instruments accordingly.

In operation, the unit is hung on the conveyor chain and run through the furnace while operating at normal load. Three 20-foot thermocouples are placed on the ware so that the tip of the thermocouple is touching the ware at the point where temperatures are to be recorded. The instrument then records the temperature every three sections throughout the length of the furnace, from preheating zone through the cooling zone. The chart, on which the three curves are imprinted, is then removed from the instrument for interpretation.

"Plastile" Plastic Flooring

For use in laboratories, chemical plants, factories, offices, hallways, and so on, The United States Stoneware Co., Akron 9, Ohio, is now marketing a laminated vinyl floor tile known as "Plastile." The tile, which is said to be chemical-resistant, resilient, durable, easy to clean, and non-slip even when wet, is made with a top surface of $\frac{3}{32}$-inch "Tygon" plastic combined with a $\frac{1}{32}$-inch bottom layer of synthetic impregnated cork.

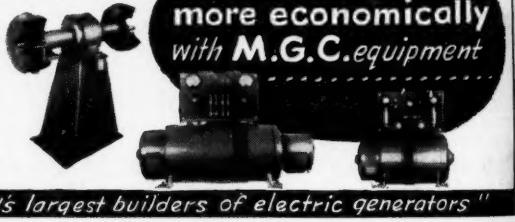
Plastile Plastic Flooring is supplied in ready-to-lay 8½-inch squares of $\frac{1}{8}$-inch thickness and is claimed to bond firmly to properly prepared wood or concrete floors using linoleum paste. Special waterproof adhesives are available for use where high bond strength is required. Plastile can be obtained in a total of 20 color combinations, including blacks, browns, reds, greens, tans, grays, blues, whites, and yellow.

You'll get *Better Plating...*

Quicker and more economically *with* M.G.C. *equipment*

The quality of your product depends on quality equipment. You buy the best for your plating and polishing departments when you buy MGC. No matter what your problem, there is an MGC Plating Generator to fit your needs. Write today for bulletin.

MGC Buffers and Grinders are available with either high or low base. **Motor Generator Corporation, Box PF-117, Troy, Ohio.**



M.G.C. "One of the world's largest builders of electric generators"

DIXIE
DUST COLLECTING SYSTEM

PROTECTS FINISHES FROM DUST-BLEMISH!

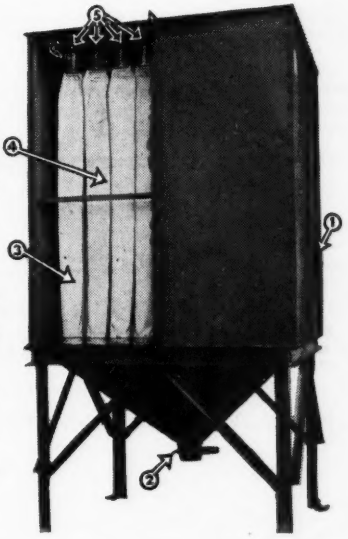
Dust out of control in products finishing plants can lower product quality . . . increase product production costs . . . decrease new profits!

Whether your finishes are paint, lacquer, varnish, enamel or plain uncoated metal, wood, plastic . . . whether your operations include metal cleaning, plating or polishing . . . Dixie Tubular Dust Collectors will guard your product finishes from DUST-BLEMISH.

Dixie "Snap Action" Gets Action!

Dixie Tubular Dust Collectors are simple in design . . . sturdily built . . . positive in action . . . smooth and non-vibrating in operation. Here's how Dixie protects your product finishes and safeguards your employees—

1. *Low Pressure Collector.* Minimum back pressure . . . air tight damper . . . adjustable disk . . . positive centrifugal action separating materials from air.
2. *Slow Speed Fan.* Low power . . . controlled volume . . . smooth, non-vibrating . . . ball-bearing . . . V-belt driven or direct connected. Fan Wheel. Slow speed or high speed wheels . . . slow operating speed . . . controlled air volume.
3. *"Air-Y."* Streamlined for minimum air resistance while air is being branched to other parts of system.
4. *"L-Bow."* Arc-lined at perfect angle-curve with reinforced dovetailing of sections for long life.
5. *Distributor Valve.* Special leak-proof damper assures direct dust routing of boiler of bin.



Dixie Dusty Says:

Write me, no obligation, for information how Dixie Tubular Dust Collectors are establishing new standards of dust control in the products finishing field."

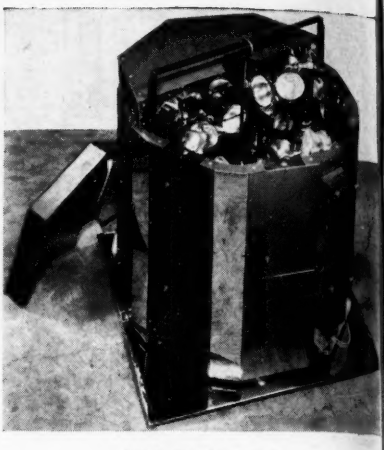
DIXIE MFG. CO., INC. 1324 RUSSELL STREET BALTIMORE 30, MARYLAND

Miskella Rack-Tub

A unit which enables the plater to simply and quickly process his own plating racks in his own rack department, to be known as the Miskella Rack-Tub, has been developed by The Miskella Infra-Red Co., E. 73rd and Grand Aves., Cleveland 4, Ohio. With the unit, the infra-red heat provided is first stored in the coated metal rack and causes the baking to be done from the inside out.

Readily portable, the Miskella Rack-Tub is supplied ready for plugging into a single-phase 230-volt line and has a total load of 8 kw. or 35 amperes. The two heat zones are each controlled by a 30-ampere fuse switch so that the lower half can be cut off when processing short racks, and so on. Sixteen toggle switches are provided for further controlling various settings of 32 fixed-focus 250-watt lamps furnished with the unit.

The Miskella Rack-Tub occupies a floor space of one square yard and is 48 inches high overall. The shipping weight of the unit is 200 lb. The top is removable in two halves. A cross bar provided for supporting the racks is adjustable for various rack lengths under 42 inches overall and 20 inches across. Said to have an average capacity of 24 large racks per 8 hours, the unit is provided with floor legs and has an insulated interior.



Miskella Rack-Tub

In addition to use in baking rack coatings, the Miskella Rack-Tub can also be used for baking canvas abrasive grinding and polishing wheels, lacquers or synthetic enamels on work hung on special uncoated rack fixtures, and so on.

M Sterling

Dated CONDUCTA-CORE

Lead Alloy Anodes for Production Chromium Plating

Has plenty of "Oomph" and combines all the advantages long desired by platers. Send for literature and quotations.

Metallurgical PRODUCTS COMPANY

Makers of Simplicity Anodes—Est. 1909

35th & Moore Sts., Philadelphia 45, Pa.

"Duranite-H" Production Finish

Claimed to be capable of producing a coating of unusual hardness, flexibility, and chip resistance, a synthetic production finish to be known as "Duranite-H" has been announced by the Zapon Division, Atlas Powder Co., Stamford, Conn. According to the manufacturer, the coating, which cures extremely full and lustrous, has unusual resistance to soap, humidity, salt spray, acid, grease, and heat.

Duranite-H Production Finish is generally applied by the spray method and has a baking schedule of ½ hour at 420 deg. F. With variations in the formula, the material can be applied by roller coating or printed methods, and, where the necessary coloring materials can stand the high bake, Duranite-H can be pigmented.

Designed for ease of handling, Duranite-H Production Finish is recommended for application to dishwashing machines, sinks, stoves, hardware, and so on.

STOP OFF

FOR HARD CHROME

BUNATOL

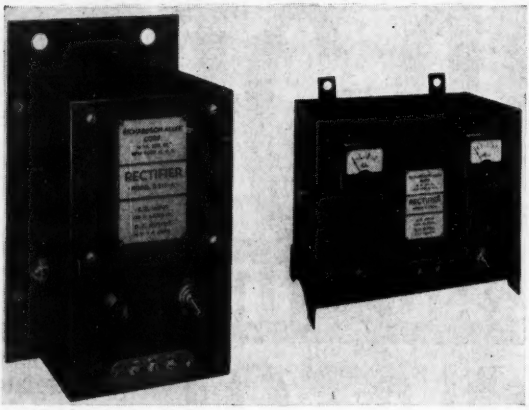
No. 474 RED

The dependable, low cost STOP OFF for use in selective Hard Chrome plating. A free flowing, heavy body liquid with deep red contrasting color. Lays over any surface without bridging. Air dies quick. Economical in material and labor cost. One coat usually sufficient. Trims easy and holds the edge. When through plating remove by soaking in hot alkali solution. Price $5.00 per gallon. Order a sample gallon now.

NELSON J. QUINN COMPANY

TOLEDO 7, OHIO

BUNATOL



Richardson-Allen Model D-513A Selenium Rectifier (left) and Model D-514A Selenium Rectifier (right)

Richardson-Allen Models D-513A and D-514A Selenium Rectifiers

The Richardson-Allen Corp., 15 W. 20th St., New York 11, N. Y., announces the addition to its line of rectifying equipment of two small selenium variable rectifiers designated as the Models D-513A and D-514A and designed especially for jewelry manufacturers and laboratory work.

The Model D-513A is a 4-ampere 6-volt rectifier that is constructed for operation on 115 volts, single-phase 50/60-cycle a.c. The unit measures 7.5 x 4.5 x 5 inches in size and is compactly designed for either bench or wall attachment.

The Model D-514A is a 10-ampere 8-volt rectifier that is constructed for operation on 115 volts, single-phase 50/60-cycle a. c. Compactly made, the unit measures 8 x 10 x 6 inches in size and includes a voltmeter and ammeter.

WHATEVER YOUR POLISHING PROBLEM
Harrison
HAS THE ANSWER!
HARRISON 4A COMPOUNDS
● Cut faster
● Clean easily
● Cost less
4A
Our 25 years experience, exclusively in buffing and polishing compounds, assures you of the right compound for the right metal.
Send a sample— ask for representative to call.
HARRISON & CO., INC. Dept. 1 HAVERHILL, MASS.

Cadux HS Bright Cadmium Plating Process

Announcement is made by the Hanson-Van Winkle-Munning Co., Matawan, N. J., of an improved bright cadmium plating process, to be known as the Cadux HS Process. Advantages claimed for the process include unusual brightness of deposit, high tolerance for impurities, high permissible densities, and excellent covering power and appearance on rough and imperfect surfaces.

Under optimum conditions, the deposits are mirror-bright as they come from the plating solution. A short dip may be used in order to compensate for variations of current distribution because of limitations in racking or because of the intricate shape of the article being plated. The process is also said to minimize finger-marking during assembly operation.

The range of the bath is from 20 to 40 amperes per square foot with an optimum current density of 30 to 35 amperes per square foot in still plating. With agitation, current densities up to 70 amperes per square foot can be employed. A technical instruction manual has been issued in which formulas are presented for the preparation of both still and barrel solutions.

ROLOCK

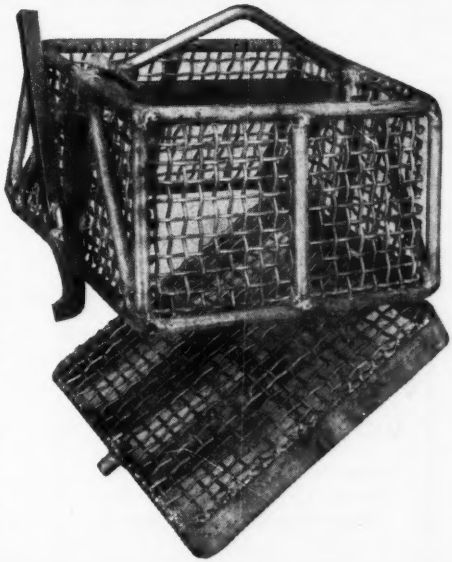
PROCESSING CARRIERS

There's a good comparison today between the "jack-pot" spill of nickels from a one-armed-bandit machine . . . and the flood of "gadgets" poured from modern automatic production machinery.

You just can't collect 'em fast enough with out-moded handling equipment.

Rolock is solving such problems with baskets, trays, racks, crates and fixtures, Custom-built to speed handling through specific Finishing Processes. Tuned-to-the-job equipment saves time, cuts costs, improves quality of product . . . like this bottom-drop Inconel salt pot basket.

We'll open up bottle-necks for you too . . . if you'll tell us your story.



NEW CATALOG ON REQUEST.

ROLOCK, INC.

1400 Kings Highway East, Fairfield, Conn.

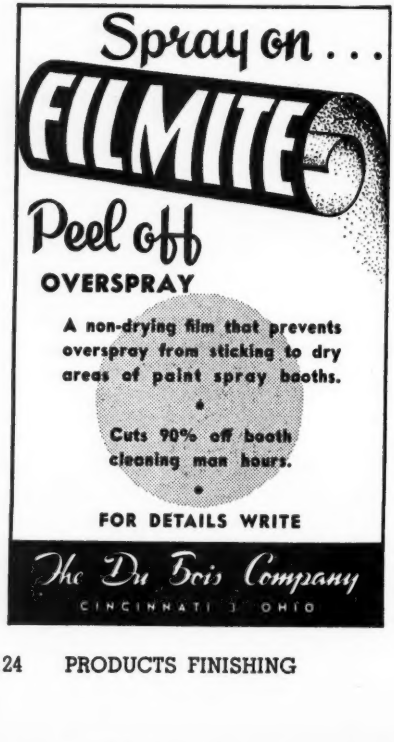
Surety "Sureseal" Treated Fiber-Bonded Canvas Glove

The addition of a treated fiber-bonded canvas glove to its line of "Sureseal" glove products is announced by The Surety Rubber Co., Carrollton, Ohio. As a result of special processing, the glove is said to embody the pliability and workability of the usual canvas or leather work glove and to be unusually resistant to wear, snagging, and abrasion.

Surety "Sureseal" Treated Fiber-Bonded Canvas Gloves

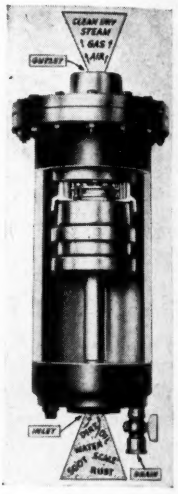
The special Sureseal treatment used in the manufacture of the glove is claimed to impregnate the palm so that the fiber strength of the palm and the stitching are greatly reinforced, thereby providing for unusually long wear and durability. According to the manufacturer, the impregnation will not chip, crack, or peel from the glove, and its permanence assures additional gripping action since the fiber-bonded palm will not develop a slick surface from collected grease and dirt.

The Surety Sureseal Treated Canvas Glove is available in either 8 or 10-oz. weights in knit-wrist and band-top types.


Spray on . . .
FILMITE
Peel off
OVERSPRAY
A non-drying film that prevents overspray from sticking to dry areas of paint spray booths.
Cuts 90% off booth cleaning man hours.
FOR DETAILS WRITE
The Du Bois Company
CINCINNATI 3 OHIO

CMD Model "E" Air Separator

The Chicago Manufacturing & Distributing Co., 1928 W. 46th St., Chicago 9, Ill., announces an air separator for delivering clean, dry steam, gas, and air. Designated as the CMD Model "E," the separator is strictly mechanical in operation and is said to require no attention whatsoever other than draining off condensation that accumulates in the chamber.



CMD Model "E" Air Separator

Made of non-corrosive metals throughout, the CMD Model E Air Separator has a maximum rated capacity of 250 c.f.m., is 8 inches in diameter x 15 inches high, and has a 1½-inch standard pipe connection. Three other models of air separators are also available.

Parco Metal Cleaner

A cleaner for steel, zinc, and aluminum is now being marketed under the trade name of Parco by the Parker Rust Proof Co., 2172 E. Milwaukee Ave., Detroit 11, Mich. Available in emulsion, acid, and alkaline types, the cleaner is a specialized product to meet varying specifications and conditions.

According to the manufacturer, Parco Metal Cleaner is formulated to make hard water suitable for cleaning, to rapidly remove soil from metal surfaces, to condition them for fine dense Bonderite coatings, to remove rust and grease prior to painting, and to provide for easy control and maximum economy.

Rossaul "Copper-Brite"

Known as "Copper-Brite," a solution for the bright dipping of copper and copper alloys has been introduced by the Rossaul Co., 119 W. 63rd St., New York 23, N. Y. According to the manufacturer, the solution removes oxides, leaving metal bright and shiny and resistant to future tarnishing or discoloration. The metal is left passivated and ready for the next operation.

Outstanding advantages claimed for Copper-Brite are that it is non-toxic, non-fuming, and safe to handle. Of particular interest to manufacturers of gold plated jewelry, locks, bronze doors, brass fittings, and similar items, Copper-Brite is recommended for use at room temperature in acid-resistant steel tanks. Work to be treated is simply dipped in the solution and then rinsed in clear water. Only five seconds of immersion are said to be required for a bright dip and three minutes for the removal of heat scale.

Claimed not to discolor silver solder, Copper-Brite is supplied in 1-gallon bottles and 13-gallon carboys.

Bradford "Kool Grip" Portable Disc Sander and Polisher

The Bradford Machine Tool Co., Cincinnati, Ohio, announces the addition to its line of "Metalmaster" portable electric tools of a portable disc sander and polisher to be known as "Kool Grip." The tool utilizes a unique design for cooling the motor and tool grip. A baffled air intake through the rear handle is said to assure a large volume of clean, cool air over the motor, with the air being directed away from the operator. At the same time, the air intake is said to keep the handle cool and provide the operator with a comfortable grip on the tool. The top plate on the air conditioned handle is removable for cleaning air baffles to restore the unit to new tool condition.

The use of double reduction gears allows for a small spindle gear and reduces centrifugal force to a minimum. As a result, grease is said to cling unusually well to the gears, thus providing a smooth, cool, and quiet operating tool, with minimum maintenance and long tool life. The Gleason cut spiral bevel gears and the helical cut intermediate gears used in the tool are made of chrome moly steel which is heat treated for correct hardness. Additional construction features include ball bearings with permanent lubrication, and a slide safety switch which can be easily operated with the thumb, but cannot be accidentally bumped on and off.

The Kool Grip Portable Sander and Polisher is produced in three models; name-

Bradford "Kool Grip" Portable Disc Sander and Polisher

ly, a 7-inch heavy duty sander, 9-inch standard duty sander, and 7-inch polisher. Standard equipment includes a 3-conductor cable and plug, detachable side handle, backing pad, three discs for sander, and lamb's wool bonnet for polisher. The standard motor is a universal 110-volt a.c.-d.c. unit. A motor in a 220-volt a.c.-d.c. type can also be obtained.

Klarifiant

FOR MAXIMUM EFFICIENCY IN
WATER CURTAIN
SPRAY BOOTHS

Eliminate

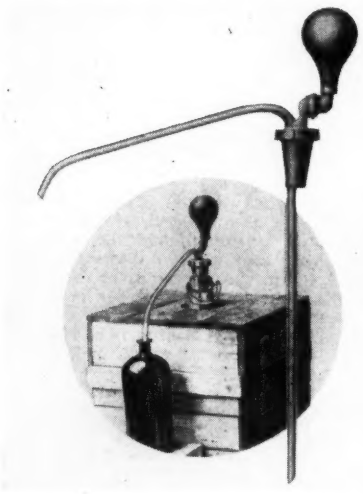
PLUGGED NOZZLES
•
WATER BREAKS
•
SCALE-CLOGGED LINES
•
SLUDGE IN RESERVOIR
•
LOSS OF PRESSURE

FOR DETAILS WRITE

The Du Bois Company
CINCINNATI 3 OHIO

General Scientific Pneumatic Acid Pump

Said to provide a safe and efficient method for removing acids and other liquids from a carboy, drum, or barrel, the General Scientific Pneumatic Acid Pump illustrated herewith is now being marketed by the General Scientific



General Scientific Pneumatic Acid Pump

Equipment Co., 27th and Huntington Sts., Philadelphia 32, Pa. With the pump, corrosive and other liquids are said to flow smoothly and stop instantly, coming in contact only with the corrosion-resistant tube of the unit. When the pump is removed, it is said to drain completely.

The General Scientific Pneumatic Acid Pump is supplied in hand or foot-operated models, either of which can be equipped with a lead tube for sulphuric, hydrochloric, hydrofluoric, or similar acids or with a Saran (flexible plastic) tube for nitric, phosphoric and acetic acids, peroxide, and many other liquids. special length tubes can be readily furnished on order.

"Metalast" System of Painting

Known as the "Metalast," a system of painting for preventing the corrosion of industrial equipment, as well as the corrosion and fouling of ships' bottoms, is announced by the C. A. Woolsey Paint & Color Co., Inc., 229 E. 42nd St., New York 17, New York.

The Metalast System of Painting includes three elements: (1) a Washcoat Primer which is applied as a single coat and serves as an anchor for subsequent coatings on steel, aluminum, galvanized iron, stainless steel, and alloys; (2) Metalast Anti-Corrosive, two or three coats of which may be applied within a few hours, providing a tough barrier coat with tight inner-coat adhesion and which is highly resistant to exterior corrosive elements; and (3) Metalast Top Coat, which varies according to color desired and usage. Aluminum is used for many industrial purposes, while Metalast Anti-Fouling (Red) is used for ship bottoms.

Applicable by the brush or spray method, with the latter preferable, all coatings in the Metalast System of Painting are said to air-dry within 15 to 20 minutes. A clean metal surface is the only requirement for surface preparation. Inside air conditioning systems, Metalast coatings are claimed to have withstood 100 per cent humidity for ten months without any sign of edge corrosion. According to the manufacturer, Metalast is also showing considerable promise for preventing corrosion in cargo oil deep tanks containing either oils or salt water, and has withstood vigorous abrasion tests given to underneath sections of railroad cars. The Washcoat Primer can also be successfully used as a foundation coat for other more conventional types of finishes, it is claimed.

Please mention PRODUCTS FINISHING when writing to advertisers.

For a real good polishing job use

Keystone TURKISH Emery

FRESH SUPPLY AVAILABLE

KEYSTONE EMERY MILLS *Write for Sample* 4316 Paul St., Phila., Pa.

PROTECT YOUR MATERIALS WITH

VINYL PEELCOTE NO. 277

The Cost-Saving Protective Coating

BY *Watson-Standard*

★ For complete protection of your materials before or after fabrication or during transportation and storage, try Peelcote. Peelcote is a protective coating which offers the utmost protection from scars, scratches and corrosion. It is applied easily by spray, dip or brush and is quickly and cleanly peeled off when it has served its purpose.

If you want to see your production costs take a nose-dive as the result of curtailed spoilage, write today for detailed information about Peelcote.

- Applies easily
- Stays on when you need it
- Comes off easily
- Air dries

THE WATSON-STANDARD CO.

Manufacturers of
PAINTS • VARNISHES • INDUSTRIAL FINISHES AND LITHOGRAPH COATINGS

Rx TOUGH JOB HEADQUARTERS
Prescription Finishes
Give us your metal coating problem. We guarantee you an answer based on your conditions, and not just a standardized formula.

FACTORY AND GENERAL OFFICES: PITTSBURGH, PA. • WAREHOUSES: BOSTON, BUFFALO, DETROIT, NEW YORK

New Literature

Adventures in Man's First Plastic. By Nelson S. Knaggs. Illustrated by Frederic H. Kock. Published by Reinhold Publishing Corp., 330 W. 42nd St., New York 18, N. Y. 329 pages. 100 full pages of illustrations. Cloth binding, board covers. Price, $6.75.

This is the story of the search for the the world's natural waxes—a romance with all the adventure and excitement of a novel but at the same time factual and informative. The reader is immediately launched on a dangerous expedition into the forbidding jungles of the Amazon Basin, where he follows the author through a series of adventures in his search for new wax-bearing plants.

The reader is introduced to the applications of natural waxes and the progress of man through the ages in terms of wax. Moreover, he is taken to the far corners of the earth where natural waxes are collected today and where he will learn that animals, vegetables, minerals, and insects are all sources of natural commercial waxes which are found in some of the strangest and most isolated spots on the face of the earth. The reader will follow a human caravan across the frozen peaks of the China-Tibet border, where each year thousands of porters stream out of the Chienchang Valley across the mountains, transportating millions of tiny insect eggs to another valley where the eggs are placed meticulously on the branches of a tree to hatch into microscopic insects which feed on the trees and produce some 13,000,000 lb. of Chinese insect wax annually. The reader is also taken to many other mystic lands in search for natural waxes.

The contents of the book are arranged as follows: Foreward; Expedition to the Amazon; Wax Through the Ages; Brazil's Tree of Life; Exploring the Big Bend; On to Mexico; Submarine Treasure; The Little Lady Lac Bug; Chin-Lu and the Wax Caravan; Ouricuri, The Ant Killer Tree; The Exparto Harvesters of North Africa; The Mysterious Bee, Famine Fighter of Mankind; A 60,000,000-Year Old Plastic; Wax from an Ancient Forest; White Crystals from Black Gold; Miscellaneous Waxes; Technical Reference Section; and Index.

Schmieg "Centri-Merge" Swirl Type Dust and Fume Eliminators, applicable to practically every industrial use where dust is a menace to operation, from sand handling to grinding, buffing, boring, and polishing operations, and so on, as well as the removal of acid fumes, are featured in a 12-page folder published by Schmieg Industries, Inc., 314 Piquette Ave., Detroit 2, Mich. The folder includes sectional views of the eliminators showing their construction features and principles of operation. In addition, the folder contains blueprints giving complete dimensions of the various sizes in which the dust and fume eliminators are available. Copy free upon request.

"Improved Pickling and Neutralizing." How certain specialized acid inhibitors and neutralizing materials promote cost-savings and improved quality production in the pickling of iron and steel is the subject of a special illustrated service report published by Oakite Products, Inc., 20 Thames St., New York 6, N. Y. The report provides helpful data on the company's pickle control materials used in the pickling of high and low carbon and alloy steel bar, round, sheet, tube, and wire stock.

A feature of the report is a special section containing graphs showing the action of Oakite acid pickling inhibitors in reducing metal loss. A comparison chart and table show how these materials reduce acid consumption and extend the life of pickling solutions by lowering iron sulphate build-up. Supplementary data include instructions for making up, controlling, and maintaining sulphuric acid and hydrochloric acid pickling solutions. The report also stresses the importance of neutralizing materials in protecting pickled surfaces against rust and in removing smut, streaks, and stains so as to improve surface appearance and facilitate subsequent fabricating operations. Copy free upon request.

GOLD PLATING SOLUTIONS

In All Colors

Guaranteed 100% Pure Gold Content
Troy Weight - Color Constant
Tarnish Resistant
Proven Quality by the Acid Test
Write or call our experts about your plating problems

Davis-K-Products Co.

54 West 22nd St., New York 10, N. Y.
Oregon 4-4108
4-4109

There's a Du-Lite Cleaner*

FOR EVERY

METAL CLEANING NEED

With the addition of No. 72, Du-Lite's new cleaner for aluminum, zinc, and other soft metals, Du-Lite now offers the metal finisher and production man a cleaner to meet every metal cleaning need. Compounded with Du-Lite's Titronne, a remarkable wetting agent, No. 72 Cleaner will not harm, etch, or stain soft metals, while maintaining highest cleaning efficiency—and economical, too, at 11¢ a pound in 375 pound drums.

Du-Lite's No. 29 Cleaner, also activated with Titronne, is a standard cleaner for iron, steel, and brass. Its improved detergent and water depressant properties will quickly remove and dissipate soil and heavy greases, penetrating even "the hard to get at" places created by seams, blind holes, and zigzag crevices. Used 2 oz. per gallon as a soak, electrolytic, or barrel cleaner. Sold in 375 pound drums at 10¢ a pound.

TITRONNE AVAILABLE FOR YOUR OWN USE

Titronne is sold for general industrial uses. Non-irritating and non-toxic, Titronne can be used in soft or hard water, and in acid or alkaline solutions. A 3% concentration will reduce the surface tension of aqueous solutions by more than 50%. Titronne may be used advantageously as an addition to metal and textile cleaners.

Your inquiry regarding either the No. 72 and 29 Cleaners or Titronne will receive our careful attention.

The Du-Lite CHEMICAL *Corporation*

100 River Road . . . Middletown, Conn.

Plating, Polishing, and Buffing Catalog. Frederic B. Stevens, Inc., Detroit 26, Mich., is now distributing a general catalog of plating, polishing, and buffing equipment which contains more than 600 pages. According to the company, the catalog is much more than a catalog of equipment and supplies, being, in fact, a veritable metal finishing encyclopedia since within its pages is an accumulation of information pertinent to modern metal finishing practice.

Compiled as a distinct service to metal finishers, General Catalog No. 30 is being distributed on a limited basis to executives in the foundry and electroplating and metal-finishing field.

Peerless Horizontal Belt Surfacing Machine for wet or dry operations on die castings, plastics, cast iron, steel, alloys, ceramics, and other materials is illustrated and described in a four-page bulletin released by the Production Machine Co., Greenfield, Mass. Specifications of the unit are included. Copy of Bulletin No. 10 free upon request.

Watson-Standard High Solids Vinylites. Complete technical data on the company's series of high solids vinyl resin technical coatings for cans, closures, containers, toys, and a variety of other items are contained in a technical data folder published by The Watson-Standard Co., 225 Galveston Ave., Pittsburgh, Pa. Each coating in the series is listed separately, with complete information provided. Data sheets cover code numbers, suggested uses, type of coating, physical constants, applicable surfaces, application methods, reduction recommendations, suggested film thicknesses, drying schedules, and other unclassified pertinent information. Copy of folder free.

ALLWOOD

"Vienna Brand" Lime

Made from Limestone that is identical in chemical analysis and geological structure with European Imported Lime. Tests show a "lime cake" made from Allwood "Vienna Brand" Lime equals the finish made from imported lime.

WRITE FOR FULL PARTICULARS

ALLWOOD LIME COMPANY

Manitowoc • Wisconsin

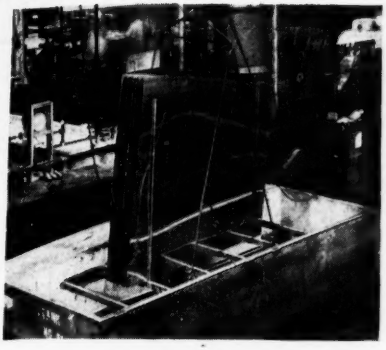
L & R Improved Industrial Precision Cleaning Machine for cleaning, rinsing, polishing, and drying small metal parts is illustrated and described in a catalog sheet now available free from the L & R Manufacturing Co., 577 Elm St., Arlington, New Jersey.

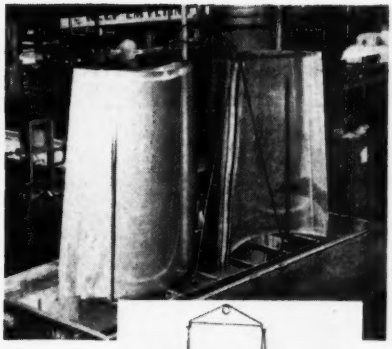
"Rustavoid" Rust Preventives, which are claimed to offer complete protective treatment from the thinnest of residual films providing temporary protection between manufacturing operations to permanent coatings for parts or equipment going into storage in or out of doors, are discussed in a four-page illustrated folder released by the F. E. Anderson Oil Co., Portland, Conn. The company has also prepared a handy data sheet on solvent, grease, and lube oil preservatives. The sheet is of heavy card stock and is punched for convenient wall mounting.

Copy of the Rustavoid folder, as well as data sheet, is available free.

Processing Carriers. Rolock, Inc., 1400 Kings Highway, Fairfield, Conn., announces a catalog which pictures and describes more than 200 custom-built processing carriers designed to handle metal parts through all finishing operations. Carriers are sectionalized under Heat Treating (brazing, enameling, quenching, carburizing, lacquering), Cleaning (dipping, pickling, electrocleaning, degreasing, washing), and Processing (galvanizing, blackening, plating, anodizing, dichromating). Data are also provided on retorts, muffles, tanks, sinks, and specialties, as well as corrosion and heat-resistant wire cloth. Copy of Catalog BR-7 free upon request.

Corrosion Resisting Process Equipment, An eight-page general catalog issued by The Duriron Co., Inc., Dayton 1, Ohio, provides a brief description of every type of corrosion resistant equipment produced by the company, including pumps, pipes, valves, fans, heat exchangers, steam jets, ejectors, tank outlets, and mixing nozzles. The catalog lists alphabetically and illustrates and describes a total of 36 products made of Durco corrosion-resisting alloys. For each product, it lists the alloys in which it is available, features, sizes, and capacities, and the number of a bulletin providing more detailed information. Copy of General Catalog J free upon request.



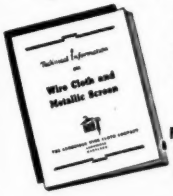


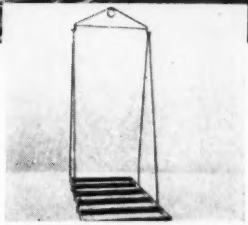
CAMBRIDGE

Solves Your Problems

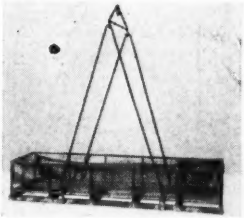
with **DESIGNS FOR SPECIAL PURPOSES**

WHEN you have a special problem—it's wise to look to Cambridge for a practical solution! Illustrated here is one of many "designs for special purposes" made by Cambridge in all metals or alloys. In operation above is a special rack made to accommodate both flat and curved sheets in cleaning processes. A variety of small parts may be handled efficiently through the same process in a specially designed wire screen basket shown at right.

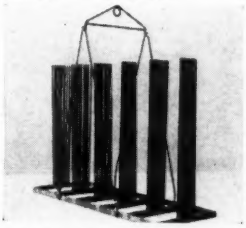
If you have a project involving special designs in metals or alloys, we welcome the opportunity to show you some of the many ways in which Cambridge has served diversified industries—how we can help you solve your problems. No obligation, of course. Write Dept. 18.

FREE—Valuable technical information. Practical reference catalog on wire crates and baskets. Write for copy.



Rack designed to accommodate pins on various centers for holding flat or curved sheets.



Wire screen basket designed to fit the rack above for convenient and efficient handling of a variety of small parts.



Pins inserted on minimum centers for flat and curved sheet cleaning operations as shown above.

CAMBRIDGE WIRE CLOTH CO.

CAMBRIDGE, MARYLAND

Boston • New York • Baltimore • Pittsburgh • Detroit • Chicago • St. Louis

The Finishing Touch — **By J. A. Patterson**

"Sure, I said a dose of salts might help him—but I meant Epsom, not nickel salts!"